Comprehensive Approach to Housing Legislation

With reference to housing in Libya

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In

Architecture

By:

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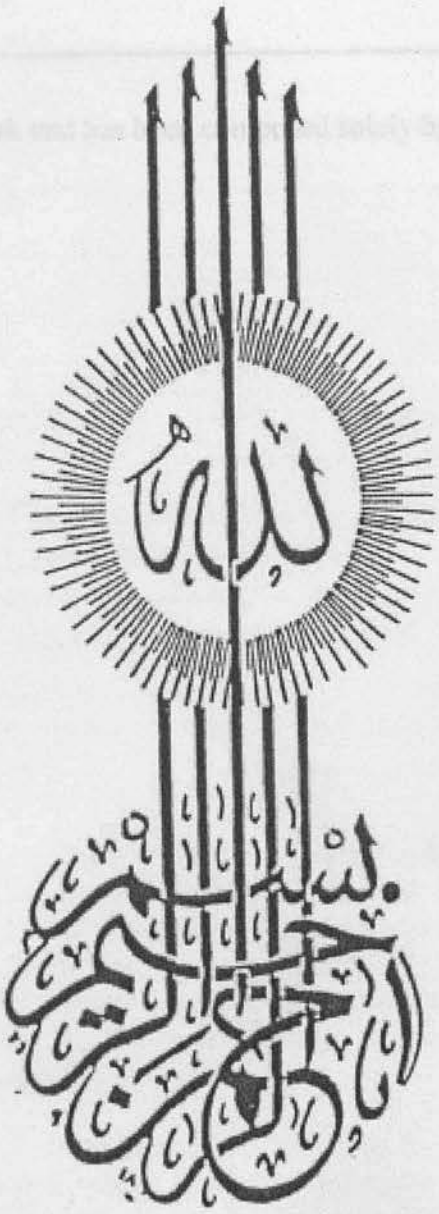

IN THE NAME OF ALLAH,
MOST GRACIOUS,
MOST MERCIFUL

DECLARATION

This thesis is my original work and has been composed solely by myself.

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Abstract

Demographic pressures have led to a remarkable expansion and physical growth of most cities of developing countries, and Libya is one of them. The tension created by the need to meet pressing housing demand whilst also accommodating wider functional, social and spiritual needs is one which current Libyan planning and building legislation has yet to resolve. The motivation behind this research emerges from observing the consequence of modern Libyan public housing and its failure to embrace and transform the cultural values and people's needs in their specific context.

The study aims to build a body of knowledge which will lead to the reform of Libyan housing legislation. New legislation is needed to deal with the everyday needs of people in a social and climatic sense as well as natural for the future development and transformation of the society.

The study focus is on planning and building legislation and its impact on the housing production from the neighbourhood layouts to the design of the house itself, in addition to examining the location of the housing projects from the point of view of their integration and segregation with the whole of Tripoli city.

This research therefore adopted a broad methodology to achieve the aims and goals of producing legislation. The nature of the topic is such that the methodology that was suggested to deal with the problems comes from different approaches and has been selected to gain as much feedback from the different theories as is possible.

The research method adopted started from familiarising the reader with the context of Libya and estates of housing and legislation followed by two parts: **the deductive** part which consists of two sections: A - general theories which come from housing, legislation and B - specific theories, which look at space syntax, sustainability and human needs.

The second approach of the research method is **the inductive** (the empirical) gaining knowledge and experience and insight about legislation from knowing practically all the problems that come from the case studies, the questionnaire and the interviews and then followed by the findings and application.

In the research findings, the results of Part One and the deductive part are merged with the inductive part to produce a framework that can help the legislators in terms of how to formulate comprehensive housing legislation. This is followed by application of the framework in the case studies, to illustrate the practical application of some research findings to public housing. In the conclusion, the problem is established and further research areas are suggested supporting the framework within the Libyan context. The outcome of the research is expected to help designers, planners, and authorities to be more aware of the needs and the criteria for a suitable housing legislation.

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DECLARATION

This thesis is my original work and has been composed solely by myself.

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DEDICATION

In memory of my father

To my kind mother

Who suffered a lot while I was a way doing this thesis

To my brothers and sisters and their children

To my wife

To all my children

With a hope that this thesis give them a great motivation for achievement of their future studies

To all of them I dedicate this thesis

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Part One, Background and Context

Introduction to Part One

This part of the thesis presents a background to the study. The aim of Part One is to give the reader a general perspective about the study area as well as grounds for revising housing legislation. It consists of two chapters. The first chapter presents introduction to the thesis which illustrates the motivation behind the research, its objectives, methodology and its organisational structure.

The second chapter provides a background to the Libyan context, as the country upon which the research focuses. This includes information about Libya's history, geography, climate, culture and an analysis of typical courtyard house and modern flat to show the changes that have occurred in the spatial configuration of the modern flat and to what extent the changes influence the way of life of the occupants.

Chapter One

Introduction

Chapter One

Introduction

1.1 Background

The societies of developing countries are rapidly changing, including in Libya. In the 1970s and 80s developments occurred in all fields of Libyan life, such as the social and economical and in housing developments. For example, the population of Libya has doubled in the last 30 years as a result of a high birth rate and good health services. Migration from rural areas and emigration from neighbouring countries have led to a remarkable expansion and physical growth of the major cities (Azzuz, I. 2000). The authority has been driven to adopt accelerated policies and urban developments to meet the lack of housing infrastructure, and social facilities. Due to this, many different patterns of housing (high-rise, semi-detached house, villa) have appeared in Libyan cities. These contemporary patterns have emerged with the assistance of building and planning legislation that has radically altered the relationship between people and the state, between their needs and traditions and the objectives of those who design their homes.

One outcome of this situation is that the residents have needed to give up or modify many of their traditions and ways of living, which had been developed over the centuries. The motivation behind this research emerges from observing the consequence of modern public housing and its failure to embrace and transform the cultural values and people's needs in their specific context. This study will investigate these changing ways of living in several case studies. The research will also attempt to derive an understanding of the Libyan housing tradition from the existing heritage, such that this may be incorporated into building and planning legislation. From this knowledge, the author will put forward

recommendations so that future legislation can foster continuity between future projects and the traditional culture.

The Municipality of Tripoli first emerged in 1870 through the Ottomans when the responsibility for the planning and housing of the city was transferred from local people to the Municipality. In 1912, Italian building legislation was applied in the main Libyan cities. The influence of western legislation started from that date. The Libyan building and planning legislation that came from western roots, was issued in 1969 and continues up to the present day.

This process has resulted in the following problems, which the author will explore in his thesis:

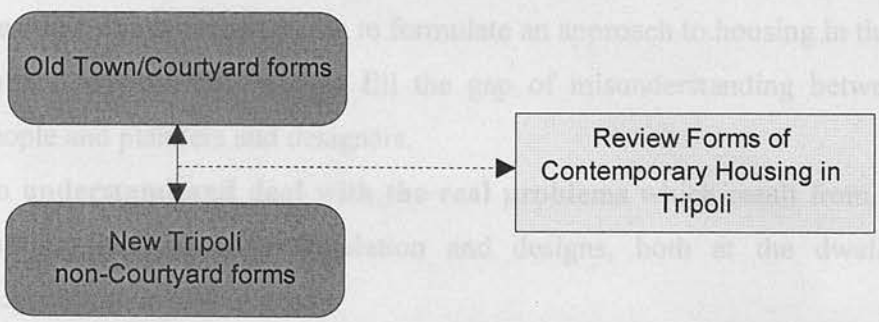
1. ***The housing policy***: The Libyan government has adopted rapid housing policies to relieve a critical housing shortage, particularly among low-income households and to improve the built environment. Due to this, shacks were demolished, and replaced by new modern houses, built in durable materials. **These new house forms however, did not emerge from the Libyan culture.**
2. ***The new types of neighbourhoods*** adopted by the Libyan authorities and designed by foreign consultants' offices, implemented building and planning legislation that did not evolve within the cultural context of Libya. **The traditional social relationships, which had been expressed through houses and external urban spaces, were ignored.**
3. ***Dwelling designs*** that did not correlate with the understandings of the local people were imposed on Libyan families. In the process of adapting to these designs, Libyan people have chosen to **ignore the legislation** regarding the use of different materials and design traditions, and **this has led to major aesthetic deformations**.

The study will examine to what extent these problems have happened due to the implementation of building legislation which has not evolved within the Libyan

context. The analytical study will be done based on the historical, economic and socio-cultural dimensions and background of the Libyan capital of Tripoli. The author will focus in this study on building legislation and its impact on housing production, from the neighbourhood layouts to the design of the house itself.

1.2 Purpose and significance of the research

- There are very few studies about public housing estates generally in Libya and particularly in Tripoli, which put an emphasis on the impact of housing legislation. This research attempts to fill in the gap in this field.
- It is important to study the traditional housing in Tripoli city in view of the fact that this housing offers a good source of knowledge from which to deduct legal and design principles as guidelines for dwellings suitable to the Libyan people culture. The customs and rules embedded in the Islamic tradition as represented by the dwellings in Tripoli Old Town could make a significant contribution to the legislation.
- The author recognises that a need for modernisation can be sourced from within Libya's cultural heritage. This research attempts to address how legislation may enable such a transformation within the field of housing.



Conceptual Diagram

1.3 The research questions

The study will answer the following questions through its inductive methodology chapters (case studies, questionnaire and interviews).

- Why do the new housing patterns in Libya generate problems that make the inhabitants of the new built environments feel alienated from the traditional values?
- How does this force inhabitants to modify much of their new dwellings?
- To what extent does this happen due to the application of new housing legislation?
- To what extent do the modifications contravene planning and building legislation?

1.4 Main aim of the study

The study aims to build a body of knowledge which will lead to the reform of Libyan housing legislation. New legislation is needed to deal with the everyday aspects and the needs of people as well as the future development and transformation of the Libyan society.

1.5 Objectives of the research

1. **To study the specified areas** to formulate an approach to housing in the Libyan cultural environment and to fill the gap of misunderstanding between local people and planners and designers.
2. **To understand and deal with the real problems** which result from adopting building and planning legislation and designs, both at the dwelling and neighbourhood layout levels.
3. **To explore what is missing from current building legislation** such that it does not generate suitable housing for the Libyan family and to deduce the design and building legislation principles of traditional houses.

1.6 Research methodology

Defining the research methodology

The research method adopted to achieve the aims and goals of producing legislation in the context of this country consists of two approaches:

The research method begins by familiarising the reader with the context of Libya and its housing estates and legislation, followed by two approaches: **the deductive** approach consists of two sections: A) general theories which come from general concept of housing and housing legislation and B) specific theories, looking at space syntax, sustainability and human needs.

The second approach of the research methodology, **the inductive** (empirical) is concerned with gaining knowledge, experience and insight about legislation from knowing practically all the problems which have come from the questionnaire and the interviews, followed by the findings, their application in the case studies and recommendations.

The nature of the topic is such that the methods that will be suggested to deal with the problems come from different approaches and have been selected to gain as much feedback from the different theories as is possible, to achieve the above stated aims of developing a housing approach that is appropriate for Libya.

In order to examine the problem from a broader perspective, the researcher intends to undertake a literature review of the fields of urban design and housing theories. Urban design theories are expected to give an idea about the meaning and definitions of housing policies and typology and to enable the researcher to understand the notions of physical and social integration and the means of achieving them.

- Location has an important influence on the quality of housing. By using **Space Syntax,** the research will examine the relationship between the characteristics of

the physical layout and the social environment. From this study, the researcher expects more principles will be added to building and planning legislation and design.

- The researcher will learn from theory by using **Models of Human Needs** as a theoretical framework. He expects from studying Maslow's Model, to explain how people's quality of life can be improved which is achieved through good quality housing. The translation of Maslow's hierarchical order of human needs into housing can help to formulate building legislation and design guidelines, consequently to define good housing for Libyan families.
- The researcher expects investigating **Sustainability** in the field of housing will provide a good foundation on which any building legislation can be developed. He considers that achieving good housing will be difficult; unless the study of sustainability issues is undertaken and its findings and recommendations assimilated into Libyan planning and building legislation, housing problems will remain.

The study will attempt to give responses in the context of Libyan housing to:

1. What is sustainability?
2. Why is it important?
3. How can it be achieved in housing?
4. What are the guidelines which will be deducted from sustainability?

- People are an important source of opinions and attitudes, which are significant for the approach. **A questionnaire** will be used for this purpose to guide the author's attitudes towards the current situation.
- Professionals' (architects and planners) views are examined through **interviews** and a questionnaire.
- Using the outcomes of the above to produce a framework that may help to develop housing legislation in Libya, as well as the author will examine and analyse three **case studies in Tripoli city,** to identify the practical application of some of the most important research framework areas to Tripoli public housing

projects. The searcher will examine three housing estates in Tripoli. These case studies are: 1- *Hay Al-akwakh*; 2 – *Hay 2 March*; 3 – *Kalet Jumma* (*Enjela*).

1.7 The thesis structure

The thesis is structured into four parts. **Part One** is introductory and consists of two chapters, this chapter (Chapter One) and Chapter Two, which reviews the background of Libya, its history, geographical, climatic and cultural aspects through five principal sections. The sections discuss public housing in Libya generally, review the cultural characteristics of Libyan communities, examine the typical Libyan traditional courtyard house as well as modern public high-rise flats and briefly present housing and legislation.

Part Two is concerned with learning from key and principles theories relevant to housing. It aims to distil knowledge from theories which will lead to an improved housing legislation. This part presents **the deductive** theoretical framework (learning from theories) and consists of two sections**: A- General theories. B- Specific theories.**

Section A consists of two chapters the first (Chapter Three) presents and reviews the general concept of housing in terms of dwelling and neighbourhood, from a theoretical perspective. Additionally, it views a dwelling as a human phenomenon which has a composite character. It reviews and illustrates the human need for a dwelling, interprets connotations of it, as revealed in the Arabic and English languages, looks at socio-cultural and gender perspectives of a dwelling, and discusses the concept of neighbourhood, and jointly their impact on human behaviour in housing. This overview helps the researcher to understand and discover the factors influencing housing, in order to examine and develop building and planning legislation in Libya. The second chapter (Chapter Four) looks at the function and concept of planning and building legislation and its impact upon housing design. It reviews its development generally in different countries, to provide a closer and more detailed background discussion in the context of Libyan planning and building legislation. It then concentrates on the influence of specific codes and their impact on current legislation on public housing in Tripoli. In addition, the

chapter seeks to discover to what extent the adopted legislation is suitable for the socio-cultural values and backgrounds of the occupants.

Section B consists of three chapters. The first chapter (Chapter Five) deals with human motivation models. This chapter introduces and compares four models that have addressed human needs from different perspectives to gain a good understanding of these needs. Human needs are behind most human behaviour. These needs have a huge influence on, control and direct human behaviour. The life of an individual and family unfolds in the space within the home and neighbouring areas. Human needs should be related to the space within housing. To formulate good spaces, the satisfaction of human needs should be recognised. Therefore, attempting to satisfy these needs in planning and building legislation is necessary.

The second chapter (Chapter Six), deals with sustainable development, such as the importance of perceiving the natural environment, having a suitable infrastructure and giving consideration to the socio-cultural attributes that can improve the quality and way of life of Libyan society. These are the major reasons for applying sustainable development concepts to housing legislation and they offer a holistic perspective to the study of reshaping an improved Libyan housing legislation.

The chapter discusses and provides an overview of sustainable development as an important approach which deals with the natural environment generally, and the built environment in particular, to improve people's quality of life. In the last decade, post Rio 1992, sustainable development has become a core goal for many governments after the negative impact of man's activities upon the natural environment (pollution, global warming, loss of agricultural land etc.).

The third chapter (Chapter Seven) explores and examines the theory of Space Syntax to be able to understand how housing spaces affect people's appreciation of their everyday life and their activities within their domestic environment. This approach demands an understanding of spaces as a social phenomenon.

The study therefore adopts space syntax as a means of exploring the ideas behind this concept. It then examines and evaluates its applications in external spaces in Tripoli City centre, Tripoli Old City and *Hay Al-akwakh* neighbourhood (case study 1) and internal spaces in a local level traditional courtyard house and modern flats.

It is necessary to look at the three external areas to analyse their spatial properties using a comparative study, since differences in planning patterns have emerged from the adaptation of different planning and building legislation between Tripoli's Old City and its New City. Moreover, to explore if the idea of neighbourhood which has been adopted for public housing and enhanced by planning and building legislation in Tripoli, has achieved good external spaces that are suitable for the way of life of Libyan families. Additionally, the aim is to identify through examining this theory, those aspects that need to be addressed and those which can be expected to benefit the outlining of improved building legislation in Libya.

Part Three consists of two chapters and presents the empirical work (**inductive)** which aims to gain knowledge from observation, a practical questionnaire and interviews. Chapter Eight deals with an open-ended survey. A qualitative questionnaire was distributed randomly among the households of the three case studies. The questionnaire was put to the respondents and selected key interviewees (architects, planners and decision makers) who deal with real housing problems, as well as discovering if other issues arose which were not addressed in the literature.

The survey aims to explore and examine people's perception of the evaluation of the public housing phenomenon in Tripoli, Libya and the implications of this evaluation for future planning and building legislation. To achieve this, a qualitative method was employed through an open-ended questionnaire and face-to-face, semi-structured interviews. The questions were classified under several sections. Due to the aspect of the legislation which deals with internal and external spaces, the questionnaire dealt with dwelling units, at neighbourhood and city level to elicit people's physical, psychological

and socio-cultural needs. The purpose of having interviews with architects and planners was to see the public housing phenomenon and the relationship between this phenomenon and planning and building legislation from different viewpoints and to have a broad perspective that could help to frame more suitable legislation.

The second chapter (Chapter Nine) presented the research finding and examined as well as describes three public housing case studies in Tripoli with the aim of demonstrating the practical application of the research judgment. The thesis finding is presented in this chapter as a framework, which is distilled from the evidence of the chapters in Parts One, Two and Three, as a body of knowledge. The objectives of the case studies section are to explore the reality of public housing in the chosen case studies, to discover if these dwellings impede some of the research framework, such as socio-cultural values of the inhabitants. To do so, the internal and external spaces are examined.

Finally, **Part Four** consists of one chapter (Chapter Ten) which describes and presents the research problem, a review of the thesis, general recommendations, further research areas are suggested to support the framework and the final message is given. The outcome of the research within the framework context (contextual consideration, framework areas and recommendations, implementation and control and sustaining) is expected to help designers, planners and authorities to be more aware of human needs and the criteria for suitable housing legislation.

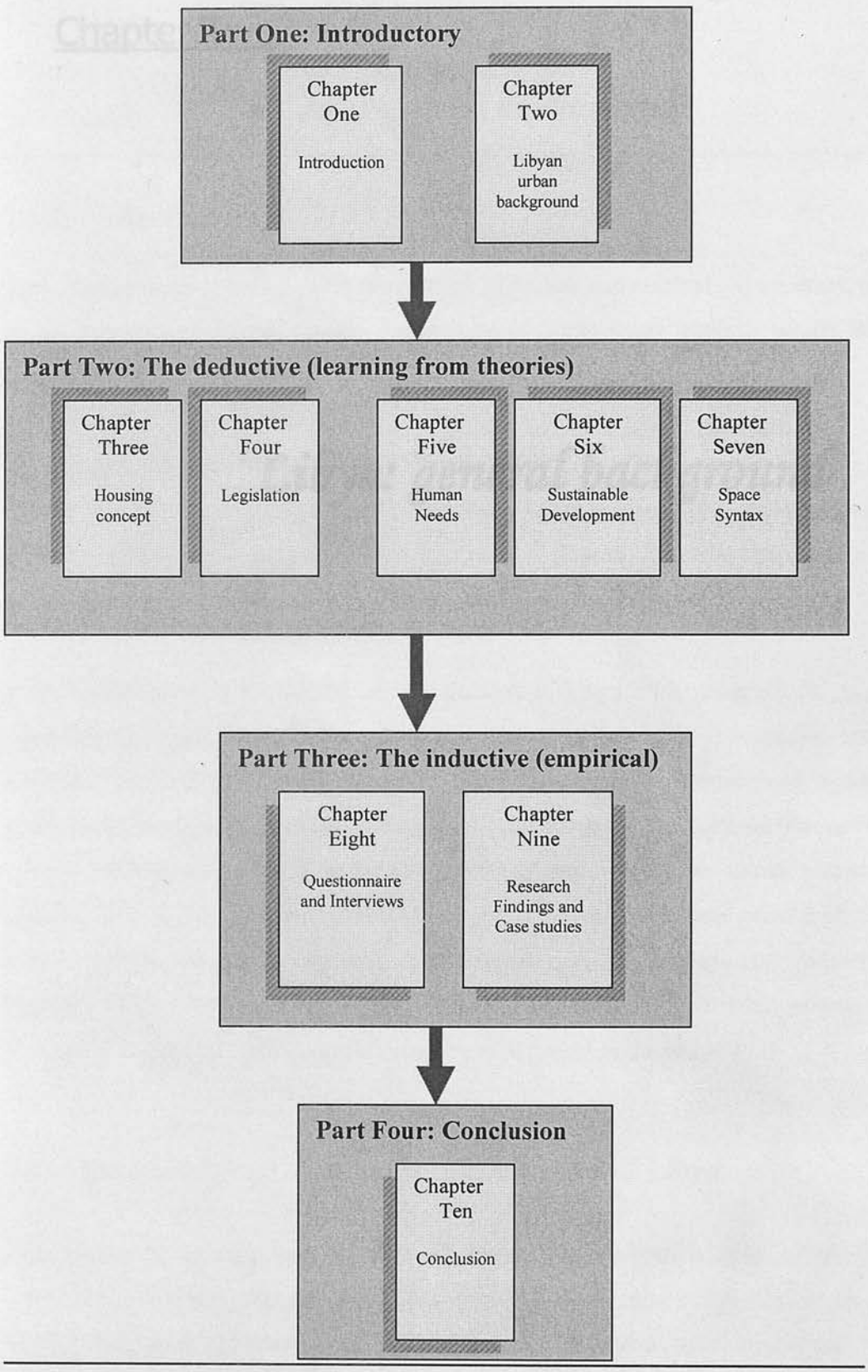


Figure: 1. 1 Research structure.

Chapter Two

Libya: general background

Chapter Two
Libya: general background

2.1 Introduction

This chapter deals generally with the natural, historical and cultural environment in Libya as an introduction to the human dimensions of behavioural patterns which influence urban forms.

To successfully understand housing in any society requires the study of the history, culture and natural environment of that society in order to analyse and understand the elements which affect housing forms and outside spaces. Therefore this research will assess how these elements affect architectural and urban production.

This chapter presents a study of urban limitation in Libya from geographical, historical, climatic and cultural aspects through five principal sections. The first section presents a general view of Libya through location, then by geography, climate and history. The second section discusses public housing in Libya generally. The third section reviews the cultural characteristics of Libyan communities and reflects on urban planning and housing. The fourth section examines the typical Libyan traditional courtyard house as well as the modern public high-rise flats in more detail, to explore and understand the impacts, which formulate its spatial configuration orders. The fifth section briefly presents housing and legislation followed by conclusion of the chapter.

2.2 A general historical and geographical view of Libya

This section presents a general view of Libya with an examination of its location, geography, climate and historical background. It discusses Libya's socio-cultural environment as a framework for looking at its urban and housing patterns. Libyan geographical, historical and social contexts give the study its credibility.

2.2.1 Location

Libyan Arab Jamahiriya[1] constitutes a large area of the North African continent. With a total area of 1.775 million square kilometres, it is the third largest area on the African continent. Libya has six neighbours. To the east it shares a border with Egypt and Sudan; to the south Chad and Niger, and to the west, Tunisia and Algeria. The Mediterranean Sea is its northern border. Libya lies to the north of the equator at latitude (33 to 18.25) and longitude (9.25) east of Greenwich (Bulugma, Kezeiri, 1995).

Many different civilisations, including Greek, Roman, Islamic and Italian have influenced Libya. Due to its location and these many influences, it has adopted many ideas from various Mediterranean civilisations as well as from the African peoples who live in the Sahara.

Figure: 2. 1 A map illustrating Libya's location and borders. (Source: www.google.com/libya images).

[1] - Jamahiriya is the Arabic name which mean masses of people. Libya has been given this name since 1977.

2.2.2 Characteristics of geography and climate

The geography and climatic characteristics of Libya have had a direct effect on housing and urban patterns (Galab, 1986). In the past studying geography involved giving consideration to the economic and social situation of countries, while Alansare (1994) points out that, to understand the development of history, you must be acquainted with the nature of its location (geography) during the nation's lifetime. Arguably, to understand and analyse the development of urban and housing patterns, we must start with the geography, the history and the civilisation of a place in that order.

There are different methods of studying geography and planning in Libya. Dioxides (1964) divided Libya geographically and climatically into three regions, which are: the coastal, mountainous (*Aljabel Algarbe* and *Aljabel Alakder*) and desert regions. While Habeb (1981) classified Libya into four geographical zones: the north coastal plains, the north mountains, the semi-desert zone and the desert zone. Said (1987) in his architectural study divided Libya into four climatic zones: the hot dry zone, the hot humid zone, the cold zone and the moderate (mild) zone. The majority of Libyan land is located in a dry desert region according to global classification of climatic regions. The dry desert region is notable for its high quantity of sun radiation and high temperature in general. The climate differs according to the topography of the land, sea, desert, and the configuration of the coast (Andacha, 1993). This study explains Dioxides three climatic regions which are:

1- The plain coastal region;
2- The mountainous region and
3- The desert and semi-desert.

The plain coastal region is affected by breezes from the Mediterranean Sea, making it dry and hot in summer and mild with rain in winter. The average humidity in this region is 58% to 65%, which in some years may increase in the summer (June to the end of August). Generally, the temperature tends to be moderate due to northerly winds. The southerly wind (*Gablee*), which is very hot and dusty, does not affect this region because

the mountain chains *Aljabel Algarbe* and *Alakder* protect it. The temperature in January, which is the coldest month of the year, reaches an average minimum temperature of 7.6C° and an average maximum of 16.5C°. In August, the warmest month of the year, the temperature reaches an average minimum of 21.7C° and an average maximum of 30.8C°. Generally in this region, the temperature tends to be mild and tolerable in summer because of the Mediterranean Sea. The annual average rainfall in the plain coastal region reaches 300-400mm though it sometimes exceeds 650mm or falls to less than 200mm in the driest years (Al-Maulode, 1993).

The climate in the mountainous region is affected by the climate of the desert and semi-desert, particularly in summer. The temperature in summer is mostly high because of the *Gablee* (wind), the southerly wind, which comes off the desert bringing with it dust since this wind does not encounter any natural obstacles. In this region the winter is generally cold, since the average altitude is 700 metres above sea level. However, the climate is hot and dry in summer and cold and rainy in winter. Fog is commonplace in December and January and sometimes snow falls in January. The average humidity in this region is between 46% to 74%. The average minimum temperature in January is 4.6C° and 32.5C° is the average maximum in August. In some years, in January, - 4C° has been reached and 43C° in August. The region experiences northerly and westerly winds in winter. In summer, the winds blow from the south, south-west and south-east which are warm and carry dust (National Atlas, 1987: 54). The average rainfall in this region is 200mm to 400mm and in some years reaches 600mm in *Aljabel Alakder* in the north-east of Libya.

Generally, the climate in the desert and semi-desert region is dry and hot in summer. In winter, it is mostly very arid since there is rarely rain. The average humidity is between 20% to 59% and sometimes increases in winter and decreases in summer. In January the minimum average temperature is 2.1C° and in August the maximum average is 40.2C°. The winds in this region are southerly and in summer and spring, they are hot and dusty while in winter and autumn, the area experiences northerly winds.

From the above, it is possible to deduce that the geography and climate have had a direct effect on Libyan inhabitants' stability and consequently the growth of its civilisation. Whereas the existence of water in the plain and desert regions had a crucial role in cities emerging in those areas, the residents in the mountainous region were forced to collect rainwater in underground tanks (Andacha, 1993:25). These water tanks have stayed in use until today and have helped to create housing settlements, such as small towns and villages which are reliant on agriculture and pasture that are dependent on rainfall.

Generally, the plain coastal and the mountainous regions are characterised by moderate temperatures because of their proximity to the sea; while in the interior, and part of the plain coastal region, like the plain of Serret, the desert climate is mixed with that of the Mediterranean Sea. The further south in Libya one travels, the effects of the desert and Mediterranean Sea climates increase and decrease respectively. The climate and geography have had a direct effect on house design and construction, such as: form, direction, building materials and the organisation of spaces. For example, the houses in the plain coastal region were designed to be close to each other with shared walls, built with blocks taken from the local area, and with courtyards, particularly so in traditional houses. However, in the mountainous region which is cold in winter and hot in summer, this climate led to the construction of a particular type of dwelling; that is, subterranean houses to achieve moderate internal ambient temperatures. The geographic location and the climate have clearly helped to determine this type of dwelling, in addition to the standard built types found on the plain coastal area.

In the desert region the climate and geography have had a very clear effect on urban forms, particularly the traditional houses and how they have been grouped to form towns. The external walls of the houses are very thick (50-60 cm) with a few openings and clay is the main building material. The cities and the towns are surrounded by walls and also by a palm tree jungle to protect the houses from the south wind (*Gablee*).

Figure: 2. 2 A traditional city in the Libyan desert region. (Source: www.google.com/libya images).

2.2.3 Historical background

This section will present an historical outline of Libya to explain how historical periods in Libya are reflected in its architectural and urban developments. It will include an explanation of urban and housing changes which have taken place in urban patterns generally, but especially in housing. Those changes that took place over different historical periods are described later in Chapter Four.

Libya or Lobya, as its first usage called it, refers to a tribe or tribes who lived in the west River Nile zone, which had an association and contact with Ancient Egypt (Bulugma and Kezeiri, 1995).

The use of the word Libya to refer to a geographical area appeared first in Greek script in Homer's Iliad (ibid). The Greek historian Herodotus in fifth century BC coined the word Libya to indicate the known parts of the African continent, apart from Egypt and Ethiopia. At that time the word Africa had not yet been coined (Albargote, 1961; Bulugma and Kezeiri, 1995).

Many different groups have influenced modern Libya: Phoenicians, Greeks, Romans, Arabs, Ottoman Turks and Italians. The Phoenicians were the first people to be connected with Libyan tribes on the west coast of Libya from the first century BC. They constructed

three cities which are: Leptis Magna, Sabratha and Tripoli (Qua) after their famous city (Kartagana) in Tunisia (Alkeeb, 1971; Endeshaa, 1993). Their intention was to dominate and exchange commercial goods from the middle of Africa to their cities on the south coast of the Mediterranean (ibid).

Bulugma and Kezeiri (1995) point out that the Greeks occupied the north-east of Libya in the seventh century BC and they built five cities: Bangaze, Korena, Chahat, Susse and Almarj, collectively known as the Pentapolis (literally five cities) (Habeb, 1981). They built them to help solve economic problems, such as a lack of food on the Greek peninsula. Consequently, they focused on agriculture and land repair in Libya (ibid.). The Phoenicians left a clear agricultural heritage that remains to this day. After the Roman forces defeated the Greeks and Phoenicians, they occupied all of North Africa, implementing an agrarian policy reliant on different crop yields, especially wheat, because Rome had suffered heavily from a scarcity of this crop. The Arabic and Islamic conquest of the Romans in 645 AD was very important historically and had a far-reaching impact on the country (Habeb, 1981). In 1051, the first members of the *Bani Hellal* and *Bani Sleem* tribes arrived in the country and some of the *Bani Loubaud* and *Bani Hayeeb*, a branch of the tribe settled in Barka in the eastern part of Libya; while the *Deyab* tribe lived to the west (Albargote, 1971).

The Ottoman occupation of Libya lasted from 1551 to 1911. During that period the commercial fortunes of all the countries from the middle of Africa (up to and including Libya) declined, therefore the economic importance of the cities decreased. The overall decline was reflected in the agricultural and commercial situation. Finally, Italy occupied Libya, from 1911 until 1930, and introduced numerous western influences to Libya, with effects on politics, social and urban forms in Libyan communities during that period. In 1952 Libya became an independent country after a long struggle, bringing stability to Libya once again. This new independence influenced all aspects of society, and signalled a return to Islamic roots which the Italian administration had tried to eradicate. Then in September 1969, the revolution occurred, which caused enormous upheaval and changes in many different directions, social, political, urban and economic.

2.3 Cultural characteristics

This section presents a general view of the cultural characteristics of Libyan communities and reflects on urban planning and housing. The cultural effects on housing play an important role in the configuration of housing spaces. Islamic influence on the culture and civilisation of Libyan society was great, especially on its architectural style, and particularly on the organisation of the external and internal space of the house and its technical construction.

Islam was introduced to Libya by the Arab conquerors who came from Egypt in 645 AD (Habeb, 1981). The acceptance of Islamic ideas by the Libyan people had a clear effect on culture and changed society. A rule to enforce the segregation between men and women was adopted. This caused changes to the organisation and details of different elements in the house and in addition, how houses were grouped together to shape the urban structure. The need for behavioural control and social connections is a very important limitation on the design of spaces (Deleval, 1974). The basic principle in designing Islamic urban patterns is to have a balance between the family's desire for privacy and the need for a common bond with all society. For instance, the Muslim domestic way of life demands complete privacy, which is highly separated from outside activity (Movten and Shallby, 1984).

Most Libyan cities show the practical application of Islamic principles, which are most clearly apparent in traditional cities, for example, Tripoli Old City. However, new architectural patterns emerged within cities as a result of the cultural influences inherited from the various occupations of Libya. The traditional buildings were subject later to western influences and culture, through the details and luxuries, which were developed to suit importers and cars. Moreover, new houses were designed to be similar to western houses and were far removed from Libyan cultural influences. As a result, Libyan people have modified these western houses, an interesting response that is discussed in detail in Chapters Eight and Nine.

2.4 Public housing in Libya

Libya, among many other developing countries, has witnessed rapid changes which have occurred at a variety of levels, such as the social and economical and in housing developments. Migration from rural areas and emigration from neighbouring countries have led to a remarkable expansion and physical growth of the major cities (Azzuz, I. 2000). The response of the authority to this has been to adopt policies and urban developments to rapidly meet the lack of housing, infrastructure, and social facilities. As a result, many housing projects have been built according to different design patterns which have appeared in Libyan cities, in addition, a new type of neighbourhood layout has been presented. One of those patterns within the new neighbourhoods which contradict the socio-cultural values and physical conditions in Libyan cities, are high-rise flats. The typical standardised public projects of high-rise flats are built with new building materials imported from outside, both organic and inorganic that have failed to respond to climatic and environmental considerations and they have neglected the resources of local available materials (see Chapters Seven and Eight). The structure of the high-rise flats is being constantly eroded. There are socio-economic problems associated with these new living environments, as well as the spatial configuration of the flats internal spaces being unable to sustain the traditional patterns of family life and to meet the demands of daily living. Many problems have appeared in these projects, such as a lack of privacy, noise, a lack of children's play areas and the provision of adequate space is rarely accounted for, nor are the cultural and social backgrounds of the residents. The large majority of these projects have failed, in one way or another, to take into account the families' requirements and needs, particularly those associated with extended families (El-Fortea, 1989: 9; Dabaiba, 1988: 334). People used to live in traditional cities where Islamic principles and socio-cultural values were the rule but when they moved to modern neighbourhoods, it was totally different from what people used to have. The adoption of western neighbourhood design and concepts has generated poorly organised external social space. People return from work and go straight into their flats. There is no shelter or shade outside and nothing to create activities (El-fortea, 1989:181).

The wider streets that have a grid-iron shape are designed for car use rather than for people. Residents like to take their cars to the entrance of the blocks, particularly when they are bringing back heavy goods or shopping. Younger and elderly people feel unsafe in such spaces for too long. This situation has forced people to stay in their flats to carry out their activities and they become cut off from outside contacts.

The Libyan government adopted a comprehensive housing policy between 1970–94 to meet the lack of housing, infrastructure and urban development. The policy aimed to construct more than 345,000 dwellings in addition to completing another 114,000 dwellings (Ministry of Planning, 1994). Many programmes were adopted to fulfil the policy through public housing, housing associations, prefabricated housing and bank loans (Ministry of Planning, 1973). Most of the public housing projects were designed and constructed by foreign companies.

In conclusion, Libyan modern public housing has neglected the traditional Islamic principles of the built environment and failed to take account of cultural values and people's needs. Demographic pressures have led to a remarkable expansion and physical growth of Tripoli. The tension created by the need to meet pressing housing demand, whilst also accommodating wider cultural values, is one which current housing projects have yet to resolve. This finds expression in the informal and often illegal adaptation of recent housing by residents anxious to satisfy their social needs which clearly can be seen in most Tripoli public housing. Chapter Eight will discuss this in more detail.

Figure: 2. 3 Public housing in Tripoli, Libya. (Source: the author).

2.5 Traditional and contemporary dwelling in Libya

This section examines in more detail the typical Libyan traditional courtyard house as well as the modern, public high-rise flat, to explore and understand the factors, which determine their spatial configuration. Through an analysis and exploration of the components of a typical traditional courtyard house and modern public apartment in Tripoli, the author will show the spatial configuration of the internal spaces of the two types of housing and to what extent they are suited to the Libyan people's way of life, in order to gain an in-depth understanding of the roles and relationships between these components and to use this understanding to build a knowledge and practice which could lead to developing a valuable, revised building legislation which would reflect current social norms and Islamic religious and cultural values.

2.5.1 Traditional typical courtyard house

The courtyard houses are evident throughout all the regions of Libya with nearly the same configuration of spaces and differ only in building materials and techniques. The Libyan courtyard house, like other courtyard houses in Islamic countries, is characterised by being inward looking and with few high outside windows to respect socio-cultural traditions as well as to suit the climatic conditions. The analysis below of the components of the courtyard house will follow the order of the layout of the traditional courtyard house itself, from the external to internal spaces (from the public to private spaces).

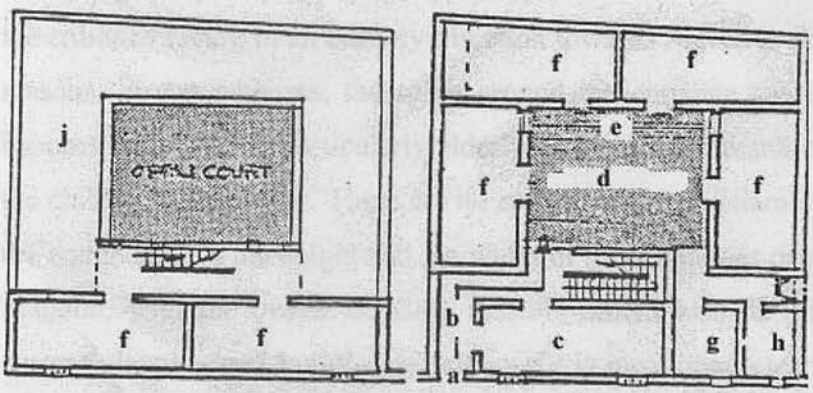


Figure: 2. 4 Typical Libyan courtyard house from the late 19th century. (Source: Dabaiba, 1988:83).

a) The entrance "***Almadkhal, Albab, Alatba***"

The entrance of the traditional courtyard house (see Figure: 2.4) is the first space that can be seen from a semi-public space (usually allay or cul-de-sacs) and is the only feature visible from the front and it is mainly characterised by blank walls or it may have one or two small, higher windows in the guest room. As a key element of the house, the entrance is highly valued, reflecting its importance and symbolic meanings, which are deeply rooted in Libyan culture, such as hospitality, wealth and safety. The expression, "*folan baba mftoh*" (his door is always open) means that the householder's home is open to guests and relatives all the time (i.e. hospitality is always offered). The entrance as a symbol of wealth is reflected by using good material, (mainly strong wood) for the main door, with rich decoration which allows individual identity to be shown, and its large size can indicate status, while the privacy value has its roots in Islamic teaching, as mentioned in the Holy Quran:

> "*O ye who believe enter not houses other than your own without first announcing your presence and invoking peace upon the folk thereof. That is better for you, that ye may be heedful*" (in Surat An-nur 24: 27).

The entrance, architecturally, is defined as the physical division between the external living space and the internal private sphere of the household and is usually higher than street level by two or three steps. According to Islamic law, the entrances of houses that are on the same street should not face each other to allow for more privacy. Moreover, the entrance facing in an easterly direction towards Mecca is preferred for psychological reasons. In some houses, the space around the entrance has a shaded area with stone benches for the men, particularly elderly people to sit on and chat, as well as to control the children's behaviour. There are no specific codes in Islamic law for the dimension of the entrance, thus the height and the width of the main door can remain appropriate to its function, with the owner deciding suitable dimensions for his entrance. However, in current planning and building legislation, it is mentioned clearly by specific codes (see Chapter Four).

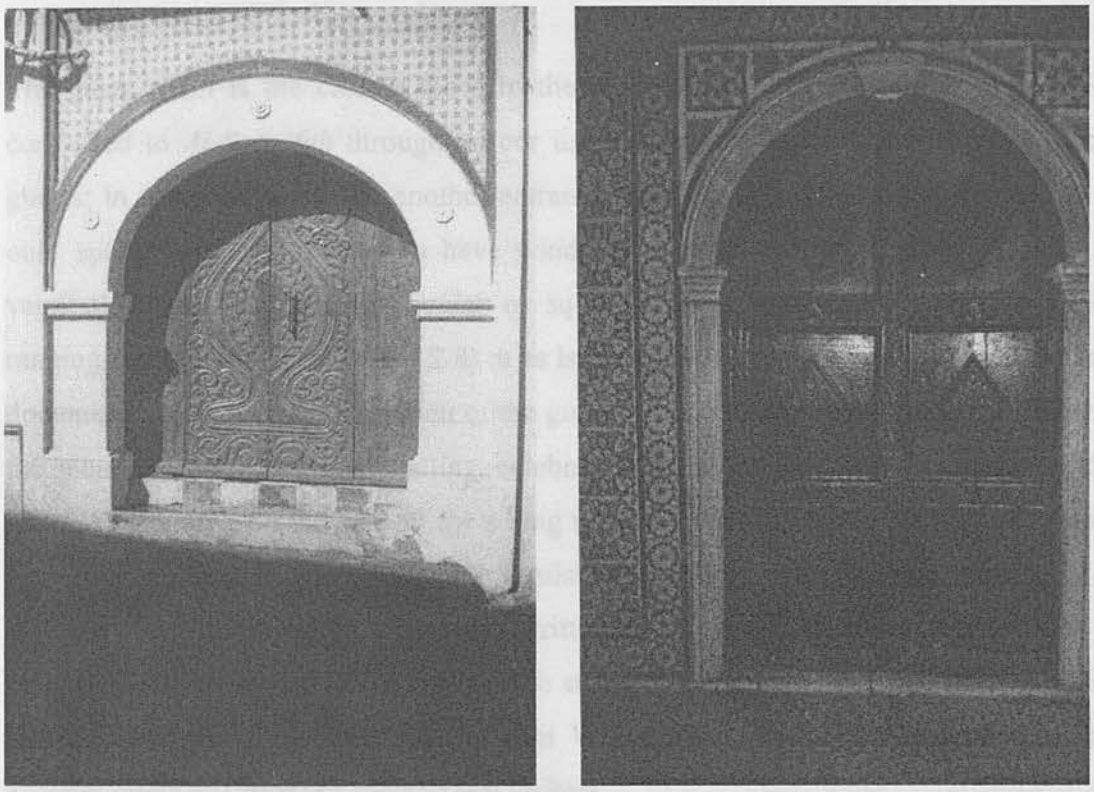


Figure: 2. 5 Two different kinds of entrances "Almadkhal, Albab, Alatb. (Source: the author).

b) The lobby "***Al-Saquifah***"

The second space in the courtyard house is called *Al-Saquifah*. It plays an important role as a controlled space between the guests' area, semi-private and family private spaces. *Al-Saquifah* is designed in such a way to avoid being directly visible to the courtyard or other private spaces and is built with dimensions usually (3 ×6) m with an open archway to the courtyard and without a door (see Figure: 2.4). It may be used as a store area for water and food, as it is a cool place, and a room off the *Al-Saquifah* is used by senior family members (grandfather) so he can be at the centre of all family life, near to guests, the store area and family members where all are under his observation (El Fortea, 1989:132). Moreover, part of it is used as a shoe area where visitors and family members should take off their shoes when they enter the house, as is the Libyan custom.

c) The guest room "***Al-Marboa***"

The guest room is the closest space to the main entrance of the house. It is directly connected to *Al-Saquifah* through a door used to receive visitors and to serve food to guests; in some houses it has another entrance opening directly onto the street. It is the only space which is allowed to have windows open to the street to admit light and ventilation. It is usually rectangular or square shaped with approximate dimensions ranging from (2 × 2.5) m to (8 × 2.8) m as is illustrated in many courtyard houses design document plans. The main function of the guest room is to accommodate male visitors as the social place for meeting, chatting, celebrating and discussing and it is designed to be suitable for sitting on the ground for a long time and relaxing (as is the Libyan custom). For these reasons, it has to be well furnished with handmade carpets, weavings and embroidered pillows on its floor and written or painted decoration on its walls and ceiling, to reflect the social and economic status of the family. In some houses, mainly rich owners, the guest room has its own WC separate from the family bathroom to accommodate overnight or longer-term visitors.

d) The courtyard "***Al-Fenaa*** or ***Wast Alhowsh***"

The courtyard in the Libyan traditional house is known as *Al-Fenaa or Wast Alhowsh* which means the centre or middle of the house (Figure: 2.6). It is the main space for most household activities and is primarily used by women and children. It is located in the most private level of the house. The courtyard, is defined as a space surrounded by other spaces (bedrooms, family bathroom and kitchen) with walls nearly 4 metres in height and open to the sky. In the Libyan traditional house, it takes a rectangular or square form, usually with dimensions of (4 × 3) m to (8 × 6) m; in some rich people's houses or in large families, houses can be (9 × 8) m or (10 × 8) m. The courtyard is the place where the household is protected fully from the harsh climate and can have full privacy.

The courtyard, which locally is known as *wast-Alhawsh*, is the living space most commonly used by all family members but mainly the women and children of the house and it functions as the heart of the house, linking most family living spaces.

Architecturally, the courtyard can be defined as a space that is surrounded by walls or spaces, which look inwards, from four directions and which is open directly to the sky. The Libyan traditional house usually has one or two courtyards, according to the size of the house and the building plot, which depends on the economic status of the owner and it has different shapes, but mainly, it is square or rectangular. The courtyards can range in size from (3 x 4) m to (8 x 10) m. The courtyard height can be one or two storeys.

From a climatic point of view, the courtyard offers necessary shade to the rooms in summer since it is usually surrounded by arcades and on summer nights, it offers a place for sleeping, while in winter, it offers a warm place, mainly for women and children to sit and enjoy many activities, such as cooking, washing, chatting and children can play happily under their parents' eye since the courtyard protects them from the harsh climate, as well as offering daylight and natural ventilation to the surrounding spaces. The courtyard also offers a number of economic advantages, such as exploiting the land to its full potential, reducing the size of the building plot, offering a place for an underground water tank (*Al-Magen*) used to collect rainwater and it is the place where bread is produced, using a traditional clay oven and the place where fruit trees are planted. It is a multipurpose social space whose use changes daily or according to the seasons.

Figure: 2. 6 The courtyard "*Al-Fenaa or Wast Alhowsh*". (Source: the author).

e) The arcades "***Al-Rwaq***"

The *Al-Rwaq* in Libyan courtyard houses is provided in some houses because it offers a shaded area for bedrooms and other rooms, as well as protecting them from rainwater. It is open to the courtyard side, has a roof usually supported by columns and arches which are higher than the courtyard level by one step (15cm) and it is used as a sitting area. It surrounds the courtyard on four sides or three, two or even one, depending upon the economic situation of the household. It can be found on the ground or first floor of the house (see Figure: 2.7).

Figure: 2. 7 The arcade "*Al-Rwaq*" in Libyan courtyard houses. (Source: the author).

f) The bedroom "***Ghorfat Al-Noum*** or ***Dar Al-Noum***"

In the Tripoli courtyard house, all the bedrooms surround and are open to the courtyard for more privacy. They are the most private spaces and are used for sleeping and are approximately (7 ×2.5 × 4) m in dimension (El Fortea, 1989: 133). All the bedrooms within the house are usually, the same size, rectangular in form, with a doorway in the centre and with one or two windows open to the courtyard. The limitations of the building materials that are used to construct the roofs (the palm trunk or olive tree branches) are clearly reflected in the size of the rooms and give them their narrow width. The number of bedrooms within the house ranges from three to more than five, depending on the number of immediate family members, the extended family and the family's economic status and they are situated mainly on the ground or first floor. The

master bedroom is very important, particularly for the women where they can be in their own private world and personal space. But it is also for use by a couple and their children. A woman of the house spends more time decorating and organising it and no adults are allowed to enter without first getting permission. On one side of the room, the couple's bed "*Al-Sedah*" is located. Its structural frame is made from palm-tree branches; covered by the leaves of palm-trees, and it is richly decorated. The bed is placed on a raised platform, with an empty, secluded space under it, which is used by the woman as a private wash area.

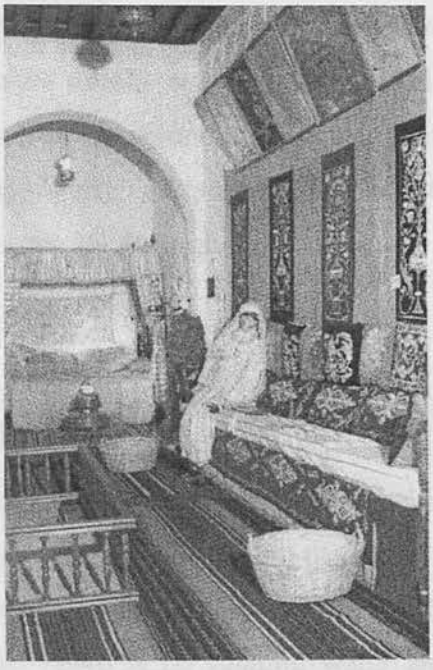


Figure: 2. 8 Bedroom "*Ghorfat Al-Noum*" in Libyan typical courtyard house.
(Source: from www.google.com/ Libya images).

g) The kitchen "***Al-Matbakh***"

The kitchen is normally located in one corner of the courtyard and close to the underground water tank (*Al-Magen* or *Al-Feskyaa*), with usually one window open to it or in special cases, depending on its location, it is open to the outside but where this is the case, the window should be small and high off the ground, for privacy. It takes its shape and dimensions according to the availability of technical structural solutions (e.g., wooden beams which minimise the length used in the roofing system to (2.50-2.00) m,

the way of preparing food, available equipment and the climatic conditions. It is a tiny rectangular shape, usually (3 × 2.5) m and is used only by women; men rarely enter a kitchen.

Sometimes the courtyard is used as a kitchen extension, for washing dishes and preparing food, particularly in summer. Kitchen utensils are few, such as (dishes, plates, etc) since meals are served on one large platter for social interaction, as well as to minimise the water that is used for cleaning (economic sustainability), and indeed, it is used once again for watering the courtyard plants. These utensils are shared by all members of the extended family. The meals are usually served outside the kitchen in the courtyard or in the *Al-Rwaq* where people sit on the ground in a circular formation. In the Libyan desert region such as in Ghadames, in city courtyard houses the kitchen is located on the roof because the heat can then go outside the house.

h) The bathroom "***Al-Hammam***"

The bathroom in the traditional courtyard house is separated into two small rooms, one is used for the WC and known as *Bait Al-Rahaa* and the other, for showering, according to Islamic teaching and is known as *Al-Mathara*. These rooms are characterised by the simplicity of their contents. There is no running water and the waste water pipe is connected to an underground septic tank and can be shared with the house next door. The bathroom is located usually near the kitchen (see Figure: 2.3). The orientation of the WC room should not face or back onto Mecca, as people feel this is disrespectful (El Fortea, 1989: 135).

i) The store room "***Al-Makhzen, Dar Al-Khzeen***"

The store room is an important component of the Libyan traditional courtyard house. The store room in the Libyan traditional courtyard house emerged as a response to the economic need to store food and water, which reflected the geographical demands and the significance of water in a semi-desert environment Because Libya has faced many

wars and external economic blockades from outside, as well as having had several years of rain shortage, these experiences have forced people to store enough food and water in their houses. It has taken several patterns in different locations, such as under *Al-Sedah* in the bedroom, mainly for the woman to store her clothes and jewels, in *Al-Magen* to store rainwater. The store room in the traditional courtyard house is controlled and managed by mainly the head of the house who keeps the key and who knows the food quantity needs for all the family members, which is usually an extended family. The store room usually has an allocated space near the kitchen or *Al-Saquifah*.

j) The roof "***Al-Satah***"

The roof of the Libyan courtyard house is mainly flat and accommodates several economic and social activities. The economic activities are drying vegetables such as dates, tomatoes and onions, particularly in summer for use in winter as well as using the roof to collect rain water by having a slight slope on it to one or more corners of the courtyard and it is connected to the underground water tank by pipes. While the social activities which take place on the roof during the summer are concerned with using it as a place for family gatherings, as well as a place to sleep to exploit the fresh night air since it is less hot than the rooms and it has a high parapet, up to more than two metres which provides suitable privacy. Due to the nature of the urban fabric of the traditional cities which are compact and as a result, the roofs of the courtyard houses are knitted together which lets women use them to pass into neighbouring houses without having to go out to the public street.

The description given above of the various components of the traditional courtyard house aims to help provide an understanding of the way of life of the people. Each space has a particular significance in Libyan culture, so by understanding how this style works, this can lead to a better understanding of people's needs and the traditions behind their behaviour in the house.

The study has shown how the traditional courtyard house reflected the family structure and income, as well as giving them scope to develop within their society. Having charge of the building of their homes meant families catered for how much or how little was required by way of space. They erected screens and rooms which suited their family's size and need for seclusion. **The house was part of their lives and the family was the soul of the house.**

2.5.2 Modern public high-rise flat

This section presents the components of a typical modern public high-rise flat, of twelve storeys within Tripoli's *Hay Al-Akwakh* neighbourhood (case study 1). It will consider to what extent the spaces meet the socio-cultural values and the changes that have occurred in them, compared with the same spaces in the typical courtyard house and following the same order of spaces as described in section 2.4.1.

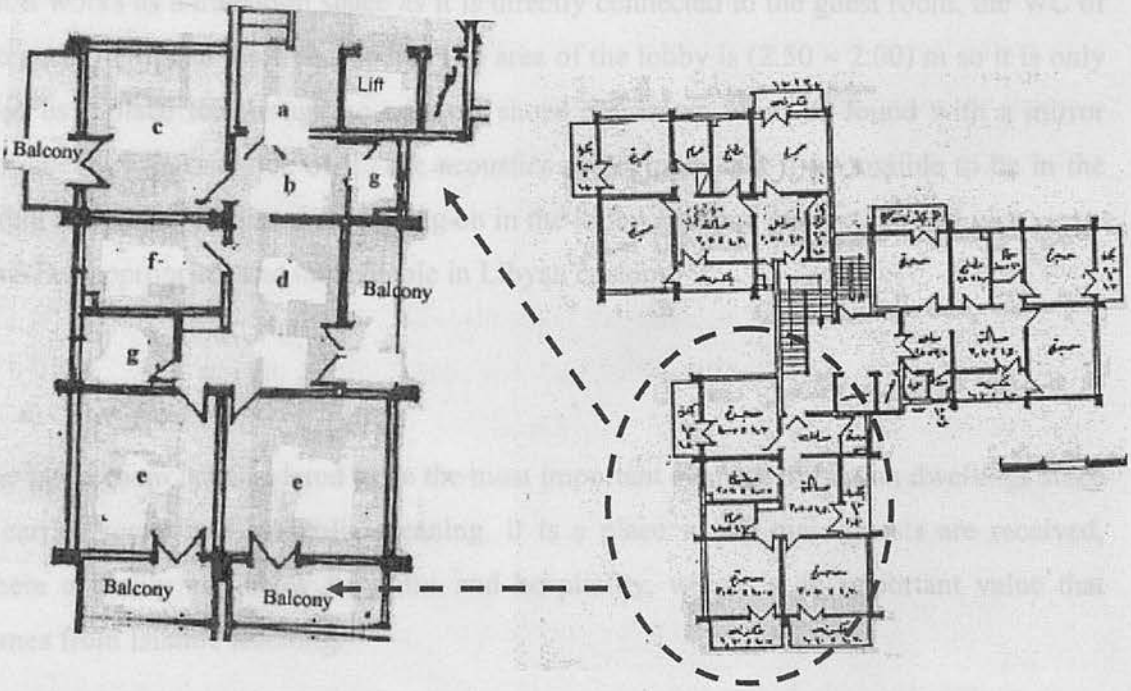


Figure: 2. 9 A plan of a typical high-rise flat in the Tripoli *Hay Al-Akwakh* neighbourhood.
(Source: documents of Ministry of Housing).

a) The entrance

The entrance of the typical modern public high-rise flat in Tripoli *Hay Al-Akwakh* neighbourhood is characterised by its simplicity of shape and standardised dimensions (2.20 × 1.30) m according to planning and building legislation, and all flats' entrances are the same colour and made from the same material (wood). Many residents add steel doors in front of the main door for safety (see Figure: 8.14b) and replace new doors with more decoration and good quality materials to be different from others. In some housing blocks, the main doors face each other, which go against Libyan customs and cause a lack of privacy.

b) The lobby

The lobby space was introduced instead of *Al-Saquifah* of the traditional courtyard house but it works as a transition space as it is directly connected to the guest room, the WC of the guest room and the living room. The area of the lobby is (2.50 × 2.00) m so it is only used as a place for storage, to take off shoes and it can often be found with a mirror suspended from one side of it. The acoustics are so poor that it is possible to be in the living room and to hear what is going on in the lobby area and guest room and vice versa. This is inappropriate and undesirable in Libyan custom.

c) The guest room

The guest room is considered to be the most important element in Libyan dwellings since it carries social and symbolic meaning. It is a place where male guests are received, where a family can show its status and hospitality, which is an important value that comes from Islamic teaching.

The guest room in modern public flats takes a square or rectangular shape, usually (4 × 4) m or (5 × 4) m. These areas are considered small nowadays because the social relationships between people have increased by using cars and modern communication, as well as via an increase in people's economic situation. Moreover, the external places that accommodate social interaction within modern neighbourhoods, such as on the

streets, are unsuitable for social purposes due to their poor spatial configuration. Most social activities take place in the guest room which puts the space under stress and there is a need for more area to accommodate a range of guests and social situations.

The guest room in modern Libyan flats continues to be close to the main entrance and secluded from the family area. In some modern flats, a balcony is added to the guest room (see Figure: 2.9) as an extension but as the housing blocks face each other, these balconies are closed for privacy (see Chapter Nine).

d) The living room

The living room in modern flats (Figure: 2.9) is the space which is supposed to replicate the function of the courtyard in the Libyan traditional house. The living room space is a prototype from flat and house designs that were built during the Italian colonial period and which have been enhanced by current Libyan planning and building legislation. It is outward looking and mainly takes a rectangular shape (5 × 4) m, with usually a balcony functioning as an alternative to the courtyard. This area is unsuitable for a large family where a couple may have as many as 9 or 10 children.

The functions of the living room have changed dramatically from those of the courtyard of traditional houses. In modern flats, the functions of the living room are limited to receiving women guests, watching TV, as a dining room and where children can play. The location and area of the living room are the main causes of this limitation. The place is characterised by having many doors of other rooms opening on to it (see Figure: 2.9) which does not allow the space to be fully maximised.

Due to using unsuitable building construction materials in the walls and roofs, such as reinforced concrete, floor tiles and cement blocks, limited to a thickness of 15cm, which accelerates heat gain in summer and heat loss in winter, people fix air-conditioning units, mainly in the living and guest rooms to solve the heat problems. These units are noisy and costly, particularly for low-income families. The thin walls of the flats lead to a lack

of auditory privacy particularly difficult for parents who must try to restrict their children's indoor activities to keep the noise down.

e) The bed rooms

Bed rooms in Tripoli modern public flats are limited to two or three rooms, with an average area of 16 m^2. This limitation leads to social, cultural and hygiene problems, particularly for large families. Islamic teaching refers clearly to a separation between male and female children in terms of their sleeping area which means that the minimum bedrooms required for a family with male and female children should not be less than three, one for the parents and one each for male and female children. Consequently, modern public flats do not meet the needs of the extended family.

Modern furnishings, such as wooden beds and cupboards are used in these bedrooms, which decreases the room space and makes it difficult for multipurpose use, whereas the bedrooms in traditional houses are characterised by minimal furniture. There the beds are mattresses that should be folded during the mornings and stored in a corner of the room, in order to have a sufficient useful space area for other daily activities.

f) The kitchen

The kitchen in Libyan public housing flats has changed radically from what it was in the traditional courtyard house, where the relationship between the kitchen and the courtyard was very strong and part of the kitchen activities were carried out in the courtyard. This relationship in the public flats has stopped, due to the absence of the courtyard element and its replacement by the covered living room.

New modern equipment is installed in the kitchen of the public flat, such as a gas cooker, refrigerator, cupboards, running water and electrical machines. This equipment improves the kitchen work conditions and makes it easier for women but they need more space to accommodate this new equipment. The kitchen is usually located near the bathroom for economic reasons, to minimise the length of water and sewage pipes. The kitchen is

usually used for preparing food and as an eating place for family members but in the main, food is carried out into the living room.

Libyan planning and building legislation has been enhanced to encourage healthier and safer conditions in the kitchens and bathrooms where glazed tiles or any other washable material up to not less than 1.50 metres in height must cover the walls and there must be suitable windows for ventilation.

g) The bathroom

Generally, the bathroom in modern public flats has greatly improved from what was available in the traditional courtyard house, such as the space, equipment, ventilation, and building materials. The area has increased, due to applying building legislation where every house with four rooms or less must have one bathroom with an area not less than 5 square metres and not less than 1.80 metres wide. Modern equipment, such as a washbowl, bathtub or shower and flush toilet are new provided as standard. Heaters, good floor tiles, and glazed tiles generally are made available in all flats. On the other hand, the separation between the shower *Al-Mathara* and WC is not considered in the design.

h) The storeroom

Most Tripoli public flats are characterised by the absence of a storeroom which causes many problems to both the flat itself and the inhabitants. Lack of enough space inside the flats and the lack of garages lead people to use the roof as a storage place, particularly for old furniture and other unused goods. Large families and strong social ties, as well as many religious and social celebrations, means that considerable quantities of food are required which become more difficult to store in small places that have been designed to accommodate only specific furniture and equipment for particular activities. Thus, in public flats, people have to close off the balconies to extend the internal spaces or they use them as storerooms. The need for a storeroom as a basic need in dwellings is not mentioned or recommended by Libyan planning and building legislation, which leaves the designers free to ignore it in their design plans for public housing.

i) The roof

The roof has an important function for several activities, as was mentioned in the last section 2.5.1 (traditional courtyard house). Its role has been decreased in public housing blocks by having a low parapet, only 0.90 metre, as determined by planning and building legislation, which prevents its use as a sleeping place, as well as making it accessible to all residents who live in the same housing block and clearly, this causes lack of privacy. El-Fortea (1989) in his study of public housing demonstrates the roof is used as a place for storing old furniture, a place for water tanks to store water and increase water pressure inside the flats, as well as a place to attache satellite dishes. All these activities cause damage to the ceilings, which were not designed to carry heavy loads, as well as spoiling the skyline (El-Fortea, 1989: 196).

2.6 Housing and legislation in Libya

Planning and building legislation play an important role in formulating and organising the internal and external spaces of dwellings and neighbourhoods. The legislation has an indirect effect on family and the society, its way of life and the way it organises the relationship between them within the internal and external spaces. The effect could be positive or negative depending to what extent the legislation embodied and respected socio-cultural values, climatic considerations, economic, environmental issues and human needs.

Land use, streets' width, building height, site coverage and zoning regulations are the main components of planning and building legislation that affect housing projects in Libya. Many public housing projects were built during the seventies, eighties and nineties. These projects, however, were built according to legislation produced during the sixties which subsequently, have proved to be unsuitable for the needs of families as it has led to dramatic changes to many of their social systems and traditions. One outcome of this situation is that residents have been forced to give up or modify many of these traditions and ways of living (see Chapters Four and Eight for more detail).

The author has identified that the developers have been following a set of legislation which has not evolved from the traditional Libyan city, which has been characterised by courtyard houses but from another typology – modern flats. The spaces of these flats are such that they have determined a very different way of life and social cultural values and societal cohesion have become weaker and more fragmented as a result. Modern legislation requires housing units to stand separate from one another across a specified minimum distance. This calls for a new type of neighbourhood layout, which in turn demands changes in the lifestyles of those who live there.

2.7 Conclusion

In summary, this chapter investigated and reviewed Libya's background from geographical, historical, climatic and cultural perspectives. The review intended to clarify how housing (external and internal spaces) was affected by these aspects. In addition, it explored the typical Libyan traditional courtyard house and modern public high-rise flat in more detail. By exploring and comparing their respective spaces, it was hoped to explain the change and developments that occur in these spaces.

Historically, Libya has been invaded many times by Phoenicians, Greeks, Romans, Arabs, Ottoman Turks and Italians, who brought with them a range of different cultural influences. Location and climate play an important role along with other dimensions, such as political and cultural to formulate the architectural style, building techniques and the way external and internal spaces are connected to each other. The major influence on the culture and civilisation of Libyan society until the beginning of the twentieth century was Islamic, especially on its architectural style, and particularly in the organisation of its external and internal spaces and its technical construction, which has given the Libyan traditional cities their identity and preserved the socio-cultural values of the people.

The investigation shows that modern public flats and new housing neighbourhoods have adopted western influences and culture, in terms of the details and luxuries, which have

been developed to suit importers and cars. Moreover, new flats have been designed to be similar to western flats and are far removed from Libyan cultural influences. The high-rise flats in Tripoli are more comfortable, in terms of sanitation, hygiene and facilities than were the traditional courtyard houses but they are soulless, lifeless and insufficient, in terms of modifying the effects of the climate. Libyan planning and building legislation has contributed to shaping housing from several facets. The next chapter will discuses and analyse in more detail the concept and function of the house, home and neighbourhood as a general theory in order to deduce knowledge for building legislation.

Part Two, Theoretical Framework (Learning from theory)

Introduction to Part Two

Deductive theoretical framework (learning from theories)

This part is about learning from key and principle theories relevant to housing. It aims to distil knowledge from theories which might lead to improved housing legislation. The object of this part is to study theories relevant to this research, such as housing, legislation, human needs, sustainability and space syntax. It aims to provide a theoretical framework for this study in order to link its finding to the body of knowledge on the planning and building legislation topic. This part consists of two sections: A) General theories: House / home and neighbourhood concepts as well as planning and building legislation. B) Specific theories: Motivation models, sustainable development and space syntax.

Chapter Three

House / home and neighbourhood concepts

Chapter Three

House / Home and Neighbourhood Concepts

3.1 Introduction

This chapter presents and reviews the general concept of housing, in terms of dwelling and neighbourhood, from a theoretical perspective. Additionally, it views the dwelling as a human phenomenon which has a composite character. This conceptual framework, which provides the study topic with its general background, is presented as a literature review. It reviews and illustrates the human need for a dwelling, interprets connotations of the dwelling as revealed in the Arabic and English languages, looks at socio-cultural and gender perspectives of the dwelling, and discusses the concept of neighbourhood, and its impact on human behaviour. This literature overview helps the researcher to understand and discover the factors influencing housing, in order to examine and develop building and planning legislation in Libya.

3.2 Human needs for a dwelling

Man's need for a dwelling is one of his basic needs. People need to cease their daily activity and to rest to regenerate themselves, physically and mentally. In order to do so, they require a secure place, a dwelling. Consequently, the dwelling is the natural repository within which such regeneration takes place. Therefore the dwelling could be considered as one crucial feature among many in life and a basic need which must be met to achieve and satisfy physiological well-being. The means of satisfying the need for a dwelling differs from one person to another, dependent on biological structure, mental and physical ability and the environmental and geographical characteristics of the place wherein a prospective dwelling is situated. From the above, it becomes clear that the

dwelling is one of the basic things any human requires. To satisfy this need requires human constancy which follows after biological satisfaction, safety and tranquillity. Satisfaction of this need differs from one society to another, according to cultural, economic, political and sociological variables.

3.3 The dwelling from the perspective of the Arabic and English language

Language is necessary to cultural expression. Understanding the meaning of language leads to an awareness of the deep structural meaning of the environmental elements and functions in any local culture. Studying the dwelling from the perspective of the language illustrates how people define their dwelling and describe its importance. These illustrations help and guide the researcher to follow the correct way to develop and examine planning and building legislation.

3.3.1 The Arabic language

The Arabic language has a complexity of meanings derived from the terms for a dwelling, such as al-*bait, al-dar, al-hawsh, al-maskn* and *al-manzil*. In the following section, the author gives an interpretation of the Arabic meaning of those terms:

- *Al-bait*, (a noun) that comes from the verb *bata*, which means to sleep and the noun *al-mabet*, which means a place where man or animals sleep and *al-bait*, which means tent, pavilion, shed, Kaaba, Mecca, homeland and motherland (Barati, Ujam and Ryan, 1997: 45-46).
- `*Al-dar*, which again means a house, in the singular but it also means one room. *Dar* is as an expression which means all things surrounded by something and which is used as a place of quarantine. *Al-dara* means a villa in Libya. In the Holy Quran, *dar* means the world: *dara al-donya* means the whole world and *dar al-akeera* means the afterlife, *dar al-fana* means mortal world (see Salamati, 2001: 45).

Bianca, (2000) points out that:

The strong identity perceived between the architectural receptacle and its social content is clearly expressed by the words "dar" and "bait", which mean "house" both in the sense of the physical premises and of the social unit or family clan. Interestingly, the word "dar" is applied in various dimensions which can transcend the scale of the house. Its etymological root has to do with the idea of encircling, and "dar" therefore means the encompassed area or community – any space or social unit which is centred in itself. "Dar al-Islam", for instance, refers to the Muslim family at large, in the sense of the whole religious community of the "umma" and the geographic sphere it occupies. .... In the urban context, "dar" means the well defined private territory of the family or the clan and the corresponding architectural shell which is identified with the inviolable "body" of the family group (Bianca, 2000: 73-74).

- *Al-hawsh* (also written as al-*housh,* or al-*howsh*) means the space around the house, "the space that draws together and unites the house or the rooms of the house by being grouped around it and overlooking it" (Al-Azzawi, in Hyland and Al-Shahi, 1986: 54). In Libya the expression *al-hawsh* is the most used for the whole house.

- *Al-maskan* is a noun which comes from the verb *Sakana* that means to cease to move, to become calm, to rest, to relax, to be secure, to feel safe, and to become amiable (Almunjid, 1994). The Arabic name *Sakan* is used to denote that the house is related to the word *Sakina* or *Sukoon* meaning rest, peace, tranquillity and quietness (Mortada, 2003:108 ; Abarkan, and Salama, 2000).

Al-Maskan is a place which provides a family with a feeling of comfort, a safe place, to rest and relax and where many activities occur to satisfy human needs. The Qur'an illustrates *Sakan* more than forty five times. The Qur'an says;

It is Allah who made your habitations homes of rest and quiet for you; and made for you, out of the skins of animals, (tents for) dwellings, which ye

find so light (and handy) when ye travel and when ye stop (in your travels);and out of their wool, and their soft fibres (between wool and hair) and their hair, rich stuff and articles of convenience (to save you) for a time (Qur'an, surat. 16:80).

- *Al-manzil* is a place for descending, referring to a tradition of welcoming tired and thirsty travellers who descend from their horse or camel and stay for a while to enjoy the hospitality of the household (Salamati, 2001: 45). In Tunisian usage *Nozel* means a hotel.

In the Holy Quran there are many indicators about the house such as:

It is God who made your habitations homes of rest: and quiet for you; and made for you, out of the skins of animals, (tents for) dwellings, which ye stop (in your travels); and out of their wool, and their soft fibres (between wool and hair) and articles of convenience (to serve you) for a time (Surat. XVI, 80-81).

3.3.2 The English language

The English language has many words that refer to a house. In Collins Thesaurus (1992) more than thirty words are synonymous with the word house. The most widely used words referring to a house in the English language are 'house', 'home', and 'ideal home'. There is a difference in the English language between 'house' and 'home'.

- A *'house'* is defined in the *Encyclopaedia of Housing* as a physical construct, and a tangible, concrete object (Van Vliet.1998: 222). Tomas and Dittmar (1995) espouse the definition of the house as mentioned in Collins Thesaurus, that a house is a structural form which provides safety and security for its residents (Tomas and Dittmar, 1995: 504). Barati et al. (1997) demonstrate that "An initial analysis of the word '*house*' produces the Old English '*hus'* derived from the verbal root '*hud*', derivable from '*huden*', literally to hide. From these stems we also get the rather basic word 'hut'. These understandings refer in English to

questions of literal shelter and concealment. The sense of concealment and the protection associated with the term '*house*' is common to most of the languages that we have surveyed" (Barati et. al. 1997: 316).

- A '*home*' according to Tomas and Dittmar "is a place of warmth and belonging among friends and family" (Tomas and Dittmar 1995: 504). Salamati (2001) points out that "home also refers to a town or country where one has strong affiliations, where one is born, where one grows up, where life is sweet and successful and full of good memories of childhood, where one's beloved live or are buried, where one establishes proud social status, where one raises one's family/children" (Salamati, 2001: 42). Thus the meaning of a home is more inclusive than the meaning of a house.

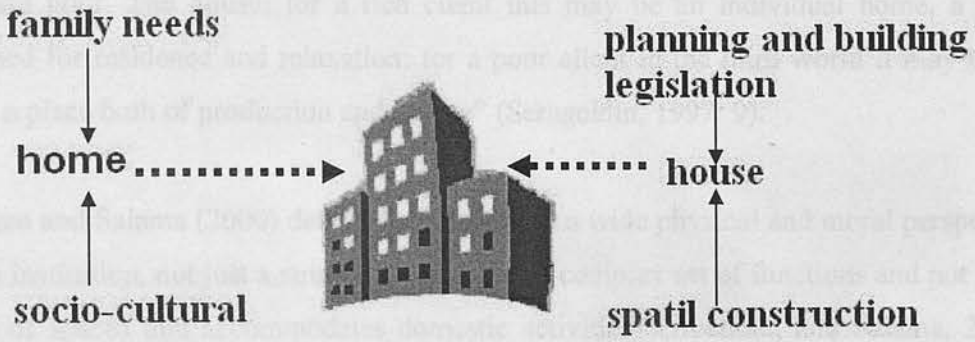


Figure: 3. 1The meaning of "house" and "home". (Source: the author).

- An *ideal home* is considered by Tomas and Dittmar (1995) as being more meaningful than '*home*'. They think that the difference between *'home'* and '*ideal home'* is the probability of attainment. An '*ideal home'* would have extra features a '*house*' and '*home*' would lack. Securely housed women given a definition of '*ideal home'* said that such material features were: "a desirable location (e.g. a cottage in the country), more space indoors and outdoors (e.g. somewhere with a big garden and plenty of room), or a greater level of material wealth (e.g. the usual – roses in the garden, honey in the cupboard)" (ibid: 504).

Consequently, an *'ideal home'* in the English language is perceived as a *'house'* that satisfies one's safety, security and association needs; it is responsive to one's desired options, and also fulfils one's esteem and aesthetic needs.

Khan describes the *house* in traditional societies as an extra effort of care for its occupants: "for most people in most traditional societies, the house has been an extension of the human body, an outer layer of clothing, not altogether unlike that of other people, but capable of accommodating an extra effort of care, of ornament, of "self-expression", that allows its occupants to inhabit it" (Khan,. 1991:26 in Mimar 39).

Serageldin (1997) classifies the differentiation in the meaning of *house* as one between rich and poor. The house: for a rich client this may be an individual home, a place designed for residence and relaxation: for a poor client in the third world it may be for more, a place both of production and shelter" (Serageldin, 1997: 9).

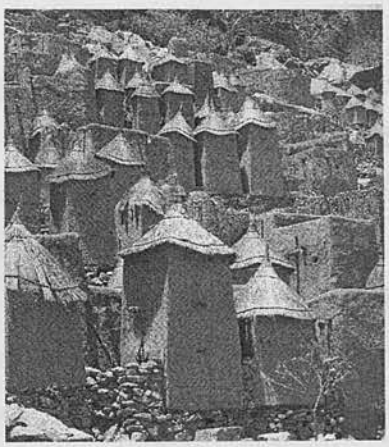
Abarkan and Salama (2000) define the house from a wide physical and moral perspective as "an institution, not just a structure created for a complex set of functions and not just a group of spaces that accommodates domestic activities" (Abarkan, and Salama, 2000), while Pearson's (1998) definition describes how occupants should feel in their houses: "we seem constantly to be having to give up things we enjoy, whereas a home should be a place of comfort and healing, a place where we feel in harmony with ourselves and all of life" (Pearson, 1998: 16). A house is a place where the occupants can experience warmth, love, happiness and co-operation as well as conflicts. The author considers that a *house* could be regarded as a womb due to the similar feelings which arise of comfort, security and safety from outside hazards.

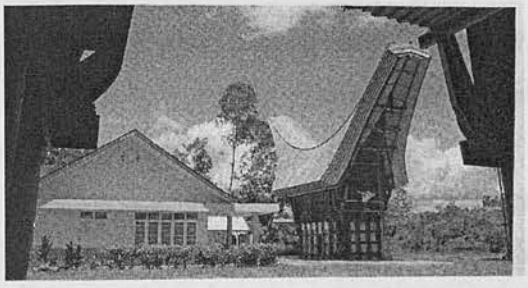
3.4 The house from an architectural perspective

The house can be defined from an architectural perspective as: all spaces surrounded by walls and with a ceiling which are prepared for human dwelling and constructed from permanent or temporary building materials and can be divided in different spaces for

different functions, as well as can be with one or more doors and windows. The design of a house can be done by people themselves as in traditional settlements or by professional people, such as architects as in most contemporary houses and with respect to specific regulations such as setback, building lots, height, etc.

Different house forms and patterns are presented all over the world. These differentiations have emerged as a result of many factors that have formulated its final shape, such as culture, climate, building materials, politics, economics, history, communication and construction techniques. These factors play an important role in shaping the external and internal spaces of housing which give a specific identity and architectural style for different societies. The effect of these factors can be seen on many levels and they can be observed clearly from the shape of the house or from the number and size, texture and configuration of its internal spaces.





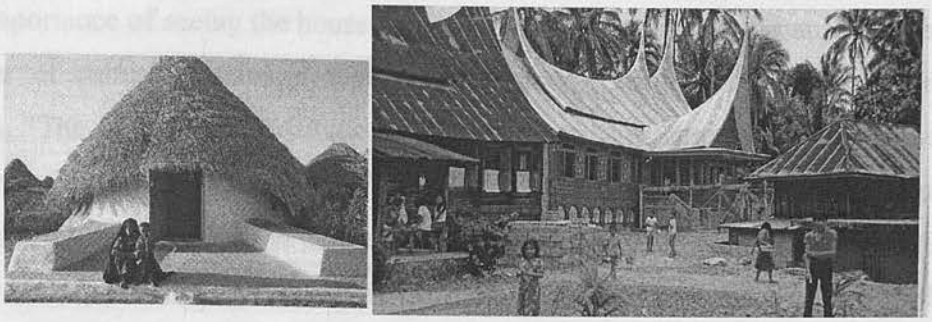


Figure: 3.2 Different house forms and patterns. (Source: Waterson, 1997: ix and Pearson, 1989:19).

3.5 The house from a socio-cultural perspective

In any society the concept of a *house* is defined by reference to its cultural context and background civilisation. The house then is considered as a construction which has culturally defined characteristics and one which differs from one society to another, according to particular societal and cultural patterns.

Many authors and investigators define the concept of culture from different points of view. Taylor (1861) defined culture as a complex whole which includes knowledge, art, beliefs, morals, law, habits and any other capabilities and habits acquired by man as a member of society. Herskovites (1952) gives the simple and broad definition that culture is the man-made part of the human environment (Herskovites, 1952 in Masaud, 1996: 39). Culture has several components which refer to the beliefs, perceptions, values, norms, customs and behaviour of any group or society. Thus culture gives to a specific society a clear distinction between good and bad, acceptable and unacceptable norms and how to behave within its rules and beliefs (Altman and Chemers, 1984). However, culture extends further than its geographical limits to include an understanding of the world and cosmology. Culture is, moreover, capable of interpreting other cultures and the ways in which other people understand the world. This is a very distinctive view of culture which relates it to nature and the cosmos as different from those views which relate culture to technology, history, economics or other ideologies (Altman in Barati, 1997: 233).

The importance of seeing the house from a cultural perspective is because it embodies all manner of cultural behaviour within any society. Furthermore as Rapoport (1969) argues, "The house is an institution, not just a structure, created for a complex set of purposes. Because building a house is a cultural phenomenon, its form and organization are greatly influenced by the cultural milieu to which it belongs" (Rapoport, 1969: 49). Oliver (1987) considers the home as the most significant cultural artefact people create, inhabit and use. In all cultures some sort of dwelling is used – usually designed and built by the people living in it (Oliver, 1987). Lewin, F. (2001) points out that "the individual's perception of the meaning of a home is, accordingly, a social and cultural construction. Thus, culture and lifestyle are probably the two most important components in the construction of the concept of home" (Lewin, 2001: 356).

From the above, it is clear that the house is a human construct that has different interpretations and meanings for different societies. In the following, the author emphasises the influence of culture on the house in human societies.

The concept of home has many meanings in different cultures. Generally security and safety is what the home stands for, as well as a private sphere and a social life (Murie, 1983; Saunders quoted by Lewin, 2001: 359).

Lawrence (1987) describes the *house* as composed of many values: "a house is commonly attributed an economic value, an exchange value, an aesthetic value and a use value; in addition to these, a house is usually attributed a sentimental and a symbolic value... All these values are not simply expressed by individuals but are acquired, nurtured, transmitted, reinforced or modified by interpersonal communication (e.g. between parents and children, or between members of the same social or professional group)" (Lawrence, 1987: 48-94).

Rapoport, in his various studies, concentrates on the influence of the cultural dimension in the built environment generally and in housing in particular and analyses the cultural components such as activity and lifestyle. "Housing is that part of the built environment

in which particular activities take place – and in different cultures these activities occur in many different settings, with different enclosure or openness that is, privacy" (Rapoport, in Taylor, 1982; Rapoport, 1998).

Lewin (2001) interpretats and sees the difference between *house* and *home* from a socio-cultural point of view, claiming that "non-physical aspects represent what we call '*home*' as opposed to '*house*'. The *house* is where we live, but a *home* is for the soul. *Home* does not only mean a residence, but also mental capacities, emotional relationships and social ties. The *home* resides at the centre of our psyches" (Lewin, 2001: 356).

Lewin, 2001 summarises the cultural concept of the house thus: "The *home* is a place for important family rituals, practical work, discussions, etc. crucial features of the individual's identity are developed in the parental home, either in line with or in opposition to it" (Lewin, 2001: 355).

3.6 The meaning of the home from different perspectives

The concept of home can take on a different significance throughout the course of life, dependent on various structural situations, in addition to those related to the individual and the group. Després described and categorised the meaning of the home as follows (Després in Lewin, 2001: 360-361):

- *The home as security and control.* The home here means the place which the owners feel they have full ability to control, a place that they feel as their own domain, nobody sharing it and nobody to tell them what they should do in it. This control should embody physical and moral meaning. Additionally the home should provide a feeling of physical security. This dimension of security and control is perceived differently depending on gender, the kinship of ownership, age and socio-cultural relations.

- *The home as a mirror of personal views and values.* Here the home becomes a symbol expressing the tastes and status of the family. For this reason the occupant desires that the home should appear clean, good-looking, with well-arranged furniture and be spatially generous. These views and values express and reflect the occupants' tastes and personalities and emphasise the family identity. Clearly, this dimension is affected by the cultural, social and economic characteristics of the wider society.

- *The home as an influence and a place for change.* This means that the owners have the ability to make changes in the home through the course of their lives. By this means, people are physically, economically and emotionally busy in their residence and are free to do as they please. These changes in majority could happen inside and outside the home and are controlled by building and planning legislation in most societies.

- *The home as permanency and continuity.* This concept considers the home as an emotional and physical source to its residents. The home becomes a familiar environment as the day, seasons and years pass and a place which gives its occupation a sense of belonging. The home is a place where memories (the childhood home) are lodged and have roots. Throughout life, this dimension expresses the degree to which the residence suits people's changing goals, ambitions and hopes for the future.

- *The home as a centre for family relationships and friendship.* The home is recognised and known as a place for strong emotional promise, a place that creates an ambience of social understanding where one's behaviour, ideas and way of life are conventional.

- *The home as a centre of activity.* The home is a setting well adapted to its purpose. It is a centre for human behaviour patterns and a focus for people's work, hobbies and leisure activities, with activities conjoined to their bodily

needs. Sometimes for poor people it is a work place. These activities increase or decrease according to age, gender, economic class and socio-cultural status.

- *The home as a retreat from the surrounding world.* This is the basic requirement that people need from their homes. This dimension could be physical (weather conditions, crimes, etc.) or spiritual (outside pressures, a way to control the level of social contact, etc.). The home should be a place for safety, independence, privacy and spirituality. This dimension differs from one society to another, particularly, in spiritual matters. This difference appears more clearly in societies that have an individualistic culture where it is possible to perceive this dimension as fundamental to an individual's understanding of the home.

- *The home as personal status indicator.* In this definition the home should be a place that reflects the occupants social standing, primarily understood in conditions of socio-economic status.

- *The home as a concrete structure.* This meaning deals with the home from the physical point of view. This refers to how the home looks in the surroundings, how much space there is in and around the residence etc.

- *The home as place to own.* The home should be a place where the inhabitants feel free inside it; they can undertake their own activities, no other person owns it and they can eject the inhabitants of the home at any time. Family life needs to have a solid foundation which is achieved by owning a home. Thus to own a home leads to having a psychological and spiritual environment for family life.

3.7 The idea of neighbourhood

"People need an identifiable spatial unit to belong to." (Christopher Alexander)

In this section the author attempts to define neighbourhood' because he believes that studying the concept of neighbourhood will lead to a comprehensive understanding of

housing as a study area. Therefore studying and examining building and planning legislation will be completed in the area of housing if a study of the neighbourhood has been done.

The concept of the house was studied from different perspectives in the last section. This section will emphasise the study of the next level of spatial organisation, the neighbourhood. The section reviews the concept of neighbourhood from Islamic and western perspectives as the two ideas were applied in Libyan cities at different periods and were enhanced by different planning and building legislation, which will be discussed in more detail later.

When the houses and external spaces are combined and knit together they make up what is called a neighbourhood. When numbers of neighbourhoods coalesce, they create a city. The role of the neighbourhood in the urban environment then should be discussed to illustrate its importance in people's behaviour that should correspond to their culture. A neighbourhood is where the daily life of its residents, their customs and behaviour takes place. Gharai, (1998) defines neighbourhood from the physical point of view. "The term neighbourhood is used to describe a geographical part of the city which accommodates a group of people and is distinct from other parts in terms of certain characteristics which it possesses. Other terms which have been used are community, district, ward, quarter and local area."

3.7.1 Neighbourhood from an Islamic perspective

Mahalleh is the Arabic name of a neighbourhood (quarter) which was the main component of any Arabic and Muslim traditional city. It was not only a physical shape it was a socio-cultural pattern and relationship. *Mahalleh* was not planned out in advance it was a general process of physical shaping dependent on the city's economy and population growth over time (Pirbabaei, 2001:125). *Mahalleh* can be defined as a group of houses and external spaces within a city and connected to other quarters or city centre by a hierarchical network of semi-private (cul-de-sacs and squares), semi-public (alleys),

and public (the main road) roads with convenient access to the other parts of the city where a homogeneous group of people live together and know everyone and feel safe.

The main services within *Mahalleh* are a mosque, Quran school, shops and coffee shops to satisfy the daily needs of the residents. These facilities offer places which offer people opportunities for face-to-face social interaction and at the same time, according to Islamic law, they should not cause any harm to private houses such as prevent privacy, cause pollution or bad smells. *Mahalleh* provided urban facilities within walking distance of where people were living and working closely together in tight-knit communities and characterised by a mixed land use. Many activities occur within *Mahalleh* external spaces, for example, the cul-de-sacs and squares (semi-private) are preferred places for children's play and for the neighbourhood's women to meet and chat when the men are away at work.

Generally, *Mahalleh* design was as result of a principle of Islamic teaching. Shalaby (1986) points out that: "The main design principle of Islamic urban pattern is generated from the complex balance between social homogeneity and heterogeneity of the socio-cultural system" (Shalaby, 1986: 75, in Hyland and Al-shahi, 1986). Homogeneous areas (neighbourhoods) were the main characteristic of the Muslims cities as Rapoport (1980) demonstrates "...in most Muslim cities which had quarters within which people bound together by ties of language, religion, occupation, family, or common origin lived together" (Rapoport, 1980:252). Dwellings within *Mahalleh* include high density and low/medium rise characterised by narrow lanes and exterior building facades. The facades are uniformly simple and the buildings themselves are attached (Saleh, 1997: 172).

The numbers of population are not limited in *Mahalleh* as in western neighbourhoods, nor were the daily needs' shopping centre and primary school seen as the main limitation of population volumes. Traditional *Mahalleh* within Muslim cities, were usually characterised by providing tranquillity and calmness, by separation from traffic and eliminating all the means of danger and pollution, as well as the absence of physical

boundaries which segregated quarters from each other, due to the *Mahalleh* compact shape and organic urban fabric. The width of streets, alleys and squares were designed according to the real needs of users to accommodate specific activities at different times and not conflict with the local cultural values and common beliefs. Thus the physical organisation of traditional neighbourhoods with closely knit dense blocks offers social homogeneity, economic stability, security and opportunity to its inhabitants.

3.7.2 Neighbourhood from a western perspective

In 1929 the neighbourhood concept was published and was one of the major landmarks in shaping urban form. The concept has been applied and adapted throughout the world during the 20th century (Patricios, 2002:71). Two forms of the concept appeared in 1929. The first was introduced by Clarence Stein and Henry Wright as demonstrated in their plan for Radburn New Jersey (Figure: 3.2) which presented the concept in the form of a specific town, that of Radburn (Adams, 1929 quoted in Patricios, 2002:71). The second by Clarence Perry (1929) introduced the neighbourhood unit idea and referred to the Radburn plan. Perry illustrated the neighbourhood unit idea in a generic form.

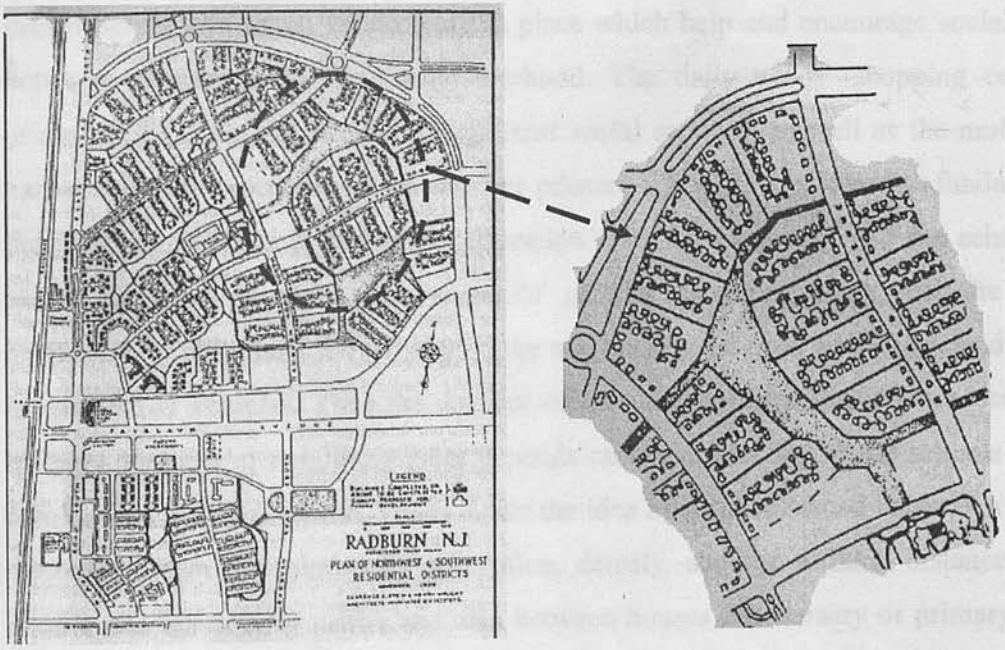


Figure: 3. 2 Typical Radburn New Jersey neighbourhood with six super blocks and detail of one super block. (Source: in Patricios, 2002:72-73).

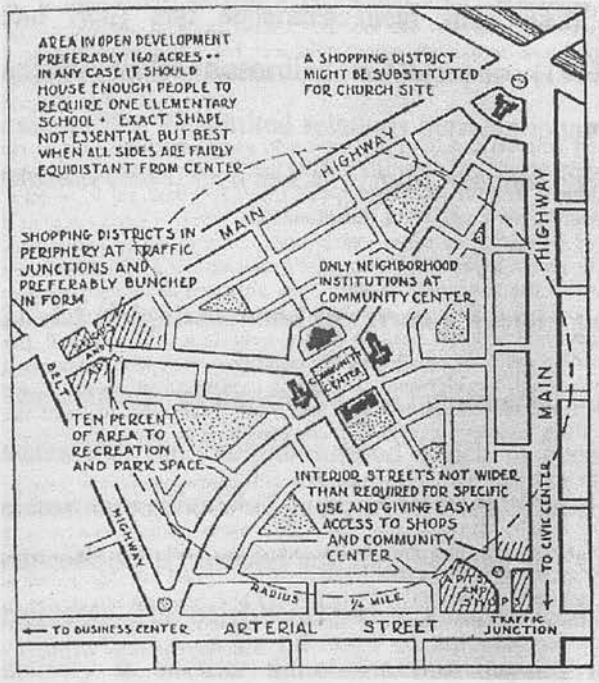


Figure: 3. 3 The model of Clarence Perry's neighbourhood unit. (Source: in Patricios, 2002:74).

Generally the aim of a neighbourhood in the western concept is to ensure the service infrastructure and social services are in place which help and encourage social meeting between inhabitants in their neighbourhood. The daily needs' shopping centre and primary school are the two most important social services, as well as the multipurpose hall and the open recreational spaces. The primary school is considered as fundamental to the neighbourhood unit, where the education rests on the family and the school at the same time. This situation leads to pupils' parents interacting better with the teachers. Furthermore, children's movements in the neighbourhood need to be separated from the movement of vehicles. Thus the concept of the neighbourhood in western countries to increase feelings of neighbourliness depends on social meeting in the schools or in the commercial places (Ibrahim, 1993). Later the idea of neighbourhood takes an a scientific dimension from the number of population, density, and the walking distance between houses and community centre and also between houses and nursery or primary schools. These dimensions are controlled by environmental and climatic circumstances on the one hand and standard of living on the other. Both have sides effects on the housing density

by increasing or decreasing it. This situation classifies people into classes (poor, middle and rich) and separates them from each other and makes the neighbourhoods unsustainable. According to Rapoport (1977) in western societies, neighbourhood exemplifies the limited relations between inhabitants and their related spaces, whereas in Muslim cities, such as Cairo, most relations happen within the neighbourhood.

3.7.1.1 Neighbourhood size from a western perspective

The educational dimension is a fundamental implement to size a neighbourhood. Lynch, states that the "neighbourhood which in classical planning doctrine is sized to fit an elementary school" (Lynch, 1984: 246). The size of the neighbourhood is constructed on educational dimension and the changing size of the school to serve different numbers of residents. The neighbourhood size ranges from 5000 to 10,000 people. Also commercial activity is another dimension that impacts on the size of the neighbourhood. The commercial centre which serves 5000 people is considered as an appropriate size according to each space shop specified to serve 75 – 130 people.

From the previous paragraph it is clear that the neighbourhood size is dependent on two fundamental factors. The first is a physical factor the commercial centre and the position of the school according to the journey from the house to it. The second is a social factor in view of the fact that the commercial centre and the school are encourage social and neighbourly relations between residents (Ibrahim, 1993: 45).

Lynch criticised the doctrine of neighbourhood size in his book (*Good City Form*) where pointed out that "adult friendships were not based on children's attendance at the elementary school, and the administratively efficient sizes of these schools distorted the urban fabric, if they were taken as a fundamental measure" (Lynch, 1984: 249).

3.8 Conclusion

The chapter reviews the general concept of housing in terms of dwelling and neighbourhood, from a theoretical perspective. Additionally, it views the dwelling as a human phenomenon which has a composite character. This conceptual framework, which provides the study topic with its general background, is presented as a literature review. It reviews and illustrates the human need for the dwelling, interprets connotations of the dwelling as revealed in the Arabic and English languages, looks at socio-cultural and gender perspectives of the dwelling, and discusses the concept of neighbourhood, and their impact on human behaviour in housing. The concept of neighbourhood was studied and presented from two different perspectives, Islamic and western. The two perspectives point out that they are contrary to each other.

The definition of neighbourhood according to Libyan planning and building legislation, Act 5 (1969) is: "It is a planning unit for a group of inhabitants or occupancies served by basic public utilities which should not be less than 3000 people". This definition is clearly influenced by the western concept of neighbourhood size.

This literature overview helps the researcher to understand and discover the factors influencing housing, as well as leads to a focus on addressing the Libyan background in order to examine and develop housing legislation in Libya. This will be addressed further in the next chapter.

Chapter Four

Planning and Building Legislation

Chapter Four
Planning and Building Legislation.

4.1 Introduction

> *"The biggest problem in architecture in the 2nd half of the 20th century is the connection between people and the physical world – the building of streets and so forth. Essentially, what we miss right now is the connection that one could 'belong' or possess in the true emotional sense"* (Christopher Alexander, quoted by Mahgoub, 2002: 48).

This chapter looks at the function and concept of planning and building legislation and its impact upon housing design. It reviews its development generally in different countries to provide a closer and more detailed background discussion in the context of Libyan planning and building legislation. It then concentrates on the influence of specific codes and their impact on current legislation on public housing in Tripoli.

In addition, the chapter seeks to discover to what extent the adopted legislation is suitable for the socio-cultural values and backgrounds of the occupants. Subsequent chapters examine in detail the influence of the specific codes in current Libyan legislation in order to explore what the missing areas in current Libyan planning and building legislation are.

4.2 Definitions of planning, characteristics, aims and objectives

Many researchers present definitions of planning and building legislation from different perspectives. A range of definitions is presented below:

- Planning is *"a collection of interrelated statutory and administrative instruments and techniques designed to safeguard, regulate, conserve and disburse land that is in the interest of the overall community, as well as to control the character, appearance and*

arrangement of buildings and facilities to ensure economy, convenience and aesthetic appeal" (Agbola, Onokerhoraye and Omuta quoted by Arimah and Adeagbo, 2000: 280).

- Al-Maulode, on the other hand considers planning and building legislation as one among many instruments for the implementation of land-use plans that aim to direct the development to the goals of the economic plans or social plans or others (Al-Maulode, 1998).
- Planning and building legislation can be defined as instruments which are able to compromise between individual and general properties and be applied equally amongst residents (Hammad, 1997: 54).
- Zoning as a brand of planning law is defined as the application of land-use controls to protect the rights of the individual property owner, as well as the rights of others in the community. The segregation of incompatible land-use into separate districts for the protection of the public's health, safety and welfare, which includes property values, is the basis of zoning (www.courses.psu.edu/).
- Building legislation assists designers and local authorities to formulate and control several types of buildings. Mahgoub (2002) defines building legislation as a set of laws and rules to control the production and process of constructing different types of buildings adopted by a building authority. They provide basic design parameters for site placement, building size, height and interior layout, as well as design and construction details (Mahgoub, 2002: 49).
- Planning and building legislation is an instrument to promote the welfare and comfort of human beings within acceptable social behaviour (Ibrahim, 1993). This definition touches more on expressing the meaning and aims of legislation than others.

In none of these definitions can planning and building legislation be said to consider how the physical, economic and social environment can be conserved, in other words *sustainable development*. Nor do they enshrine the basic needs that protect life, religious beliefs, people's thinking and imagination. Their approaches towards ownership are not geared to avoiding problems and obstacles, nor to achieving improvements in the standard of living (*human needs*). Due to these shortcomings, planning legislation as it

exists may force inhabitants to construct outwith the legal framework in order to fulfil their human needs.

From the previous statements the broad basis of existing planning and building legislation could be defined under the following general aims:

- Protection of public health;
- Protection of public safety;
- Protection of public welfare; and
- Protection of public security.

These aims could serve as guidelines for many authorities to build their own planning and building legislation by making detailed breakdowns of each aim. Many countries have developed and issued such legislation. Some countries, such as the UK, Australia and the USA have specific codes for housing, planning or zoning and public health. Others have integrated these codes as chapters into one code, as did Egypt and as currently, Libya is doing, which will be investigated further in this chapter.

4.3 International historical context for legislation

This section deals with the development of planning and building legislation from an historical perspective in different countries. This overview casts light on the reasons behind the need to have such legislation and why it is consistent or differs from one country to another. Furthermore, it provides a fundamental knowledge of how to build and develop future legislation that meets the four basic aims as stated in section 4. 2.

Building codes were created in Egypt and have been used since 2000 BC. They were used primarily as deterrents to ensure the safety of people. For example, if a man died because of a building failure, then the builder himself would be held liable and put to death. In Roman times, the main objective of various rules and regulations was to reduce

the possibility of failure, which has been the main theme of regulations and their enforcement to date (Polley, 2001).

Written legislation that deals with the relationships between the widths of roads and the heights of buildings overlooking these roads, emerged from the city of Rome in 1880. This was aimed at organising the proportions of the roads and building from an aesthetic perspective (Al-Maulode, 1998).

Planning in much of the Middle East and North Africa is a combination of two different strands of thinking: western legislation and the culture of Islamic principles and guidelines. These two approaches will be considered next.

4.3.1 Planning, housing and building legislation in Britain

The housing, public health and town planning codes in Britain, the author understands, exemplify a comprehensive development of acts in these fields. These codes will be briefly reviewed in the following:

In the seventeenth century, as Polley (2001) points out, the first acts to cover the whole of England were the result of the Great Fire of London in 1666, when four-fifths of the city was destroyed. Following the fire, four surveyors were appointed by the city to draft regulations, which were embodied in the Rebuilding Act 1667. They determined:

- The utilisation of four different 'purpose groups';
- Minimum storey heights;
- Party external wall thicknesses;
- Space separation of spaces; and
- Rainwater drainage provisions.

These regulations were then presented in detail for the first time (Polley, 2001: i).

The London Building Act 1844 dealt with improving public health in housing in new developments. This Act required an open space around residential dwellings of a minimum of 100 sq ft but without mentioning the width of that space (Alhemaidi, 1996).

The Industrial Revolution in England, which caused many urban problems like congestion and overcrowding, prompted the enactment of the Public Health Act of 1848, in which the erection of buildings and dwellings was not subject to local authority control. Many dwellings were built without proper ventilation or good standards of hygiene. The Public Health Act of 1848 was just the first in a series of general acts dealing with public health, including the Public Health Act 1961, the Health Service and Public Health Act 1968 and the Control of Pollution Act 1974 (Heap, 1978). These acts empowered local authorities to control street widths and heights, and the structure and layout of buildings. The Housing of the Working Classes Act 1890, as Heap points out, was a new type of legislation known as housing law, which improved the deficiencies of public health law regarding the housing of the working classes.

After that, a series of housing acts were passed, like the Housing Acts of 1925, 1936 and 1957, the Housing Rents and Subsidies Act 1975, and the Housing (Homeless Persons) Act 1977. Of this series, the Housing Act 1957 remains fundamental legislation on housing because its scope is not limited to any particular class of persons or income groups but is of general application (Heap, 1978: 4).

The Building Act 1984 provides a statutory framework for building control. This Act is divided into three parts. Part One treats with building regulations and related matters, while Part Two deals with the system of private certification. Part Three covers other provisions that relate to buildings, such as drainage and sanitary conveniences, as well as the extent of the local authority's power in regard to dangerous buildings, defective premises etc. These provisions are of the greatest importance in practice (Powell-Smith and Billington, 1991: 1.3). The Building Act 1984 in England and Wales aimed to:

- Secure the health, welfare and convenience of people in or around buildings and of others who may be affected by buildings or matters connected with buildings;
- Further the conservation of fuel and power; and
- Prevent waste, undue consumption, and misuse or contamination of water (Powell-Smith and Billington, 1991: 1).

The Building Regulations 2000 are made under specific sections of the Building Act 1948. They enforce requirements on people carrying out certain building works within England and Wales (Polley, 2001: 1).

In summary, the nineteenth century saw the birth of housing law while town planning law is the creature of the twentieth, during which the Garden City theory, first proposed by Ebenezer Howard influenced contemporary planning thought in Britain and many other parts of the world. In recognition of his theories the Town Planning Act 1909 was eventually introduced.

The 1909 Act was the first in Britain to deal with the subject of town planning. This Act gave new powers to local authorities to arrange 'town planning schemes' to control the development of new housing areas. Furthermore, the Act provided the essential basis for subsequent planning laws passed in 1919, 1923, 1925, 1932, 1943 and 1947. Of these, the Town Planning Act 1925 separated, for the first time, town planning from housing, without adding any new provisions. The 1932 Act gave local authorities jurisdiction to create planning schemes for any land in any area, whether developed or not (see Ratcliffe, 1978 for more details).

4.3.2 Islamic urban principles and guidelines

Several researchers have studied Islamic law from different points of view (Al-Hathloul, 1981; Akbar, 1984; Hakim, 1986; Hammad, 1997; El-Kassar, 2001). A brief overview is presented here to illustrate how Islamic cities were built and what factors lay behind their development. It is beyond the scope of this study to present a full analysis of Islamic law; what follows is but a brief review of the main points.

Islamic legislation in city planning and building has been an important factor that has formulated city planning and the relationship between buildings and the design of buildings in Islamic societies. Islamic legislation has generated and preserved a unique

approach to cities and buildings. The overview here provides an understanding of how the Old City of Tripoli, as an Islamic city, was controlled at the level of planning. It illustrates and presents the definition of Islamic law, the sources and objectives of that law, what aspects it deals with and its system for implementation.

4.3.2.1 Definition of Islamic planning and building legislation

Islamic legislation in city planning and building is that part of Islamic law which includes rules and guidelines, developed since the advent of the religion of Islam, to control and guide the behaviour of people to ensure human welfare within the built environment (Alhemaidi, 1996). Moreover, these rules and guidelines are concerned with the social benefits, their advantages and abuses, more than the consequences of material benefit. *Shari'a* (the Divine Law of Islam), as Kamona (2001) points out, differs from modern law in several ways:

- It sees a unity between two ideologies, law and religion. Islam embraces the relationship between the individual and his god as well as his group, and the groups to each other. So Shari'a is an exhaustive blueprint for religion and social organisation;
- The commixture of law concept with morals. The framework of morals is more exhaustive than the framework of law;
- The commixture of law with proper application of social justice;
- *Shari'a* has a socially collective character; and
- Commixture of justice with the concept of duty (Kamona: 2001).

4.3.2.2 Sources and objectives of Islamic legislation

The Holy Koran and the Sunna (the prophet's sayings, acts and acceptances) are the main sources of Islamic legislation. The Sunna was collected from the Prophet's followers by

several Muslim scholars over the first century *Hijra* (from 640 AD). Several books of the Sunna contain thousands of prophetic traditions connected to Muslim life, law and recommendations, including some general rules on planning and building. New rules were later added and documented in a number of books of *Fiqh* (the laws governing daily life and an interpretation of the Koran and Sunna). These books contain building and planning legislation and the responsibilities of individuals and authority (Hammad, 1997: 55).

Book title	Subject	Notes
▪ Al-Mudawanah in Malki jurisprudence. ▪ Al-Moghni in Hambali. ▪ Al-Umm in Shafi' Fiqh.	The main books of Fiqh.	Written approximately in the second century after Hijra (9th century AD).
▪ Al-Rowed Al-Meter. ▪ Moajam Al-Buldan.	Books of travel and geography.	Al-Homayri, M. (published in 1975). *Al-Rowed Al-Meter*. Lebanon Book Shop, Beirut. Al-Homayri, Y. 1975. *Moajam Al-Buldan*. Beirut House Press, Beirut.
▪ Maalem Al-Koraa Fe Ahkam Al-Hisba.	Al-Hissba books.	Al-Koran 1937. *Maalem Al-Koraa Fe Ahkam Al-Hisba*. Examined and published by Robin Leo, Art Press, Cambridge.
▪ Al-Kadaa Fe Albonyan (Judicature in Building) by Ibn Allayth Al-Masree. ▪ Ketab Al-Jedar (wall book) by Essa Ibn Denar. ▪ Ketab Al-Jedar (wall book). By: Essa Ibn Mussa. ▪ Ketab Al-Elaan Fe Ahkam Al-Bonian by Ibn Ramee.	Legislation books their resources from Fiqh books.	Approximately in 200 AH (850 AD). Written in 200 AH (850 AD). Approximately in 380 AH (1150 AD). Around 600-700 AH (1350- 1450 AD).
▪ Nawazel Ibn Roshd.	Al-Nawazel books (occurrences).	Manuscript No. 12397 Tunisia.

Table: 4. 1 The main resource books in Islamic planning and building legislation (information from Hammad 1997; compiled by the author).

The main objective of Islamic legislation is to assist people's lives within the sphere of social behaviour. Its application of aspects of the concept '*La dherer wa la dhirar*' (No harm, whether for your profit or not) has played a significant role in directing the progress of social life in Islamic cities. This application is applied on two levels.

At the level of land use, it advises keeping apart installations that cause harm to the environment and to health (noise, vibration, smoke and waste) from residential and commercial districts. It requires the classification of commercial activities to keep away any which bring pollution and overcrowding to the inhabitants, or blight their privacy and tranquillity. Additionally, it prevents harm that may occur from collecting too many incompatible goods in one place such as clothes beside meat, fish or vegetables in a market place (Kamona, 2001; Al-Maulode, 1998).

At the level of planning and building, the application could be seen as general guidelines maintaining the Islamic spirit of the society. These guidelines on housing as expressed in the books listed in Table 4.1 are as follows:

- To prevent harm that comes from a house which blocks the daylight and ventilation of neighbouring houses;
- To prevent harm that comes from openings that overlook neighbours' houses;
- To prevent harm that comes from the height of a house and which causes a lack of privacy in neighbours' houses;
- To prevent harm that comes from the projection of houses onto public areas and roads; and
- To prevent harm that comes from excessive use of public facilities.

These guidelines assisted in formulating the houses in Islamic cities with inward courtyards as a preventive means to avoid harm.

Streets in Islamic legislation were carefully designed and planned after the concept *La dherer wa la dhirar*. The streets were classified in two types; the first is the public road (*Al-Tareeqh Al-Muslimeen* or *Al-Tareeqh Al-Nafidh*) that can be used by anyone, at any time without obstructing or impeding traffic. It allows only landlords to open windows and doors of all sorts of buildings towards these roads on either side but on the condition that those actions do not cause harm or pollution to the environment. The minimum width of the road is 7 cubits (3.23-3.50m) and the minimum height of an arch is also 7 cubits

according to *Fiqh,* where it is agreed that a person riding a fully-loaded camel or with a riding box for a woman (see Figure 4.1) should be easily able to pass through. The second type of road is the private cul-de-sac (*Derb Ghair Nafidh, Sikka, Zuqaq and Zanqa)*. In Libya the word *Zanqa* is commonly used, particularly in old cities like Tripoli Old City (see Figure 4.2). These roads were co-owned by those who lived on both sides, who were therefore, responsible for their maintenance and the prevention of any activity on them. The minimum width of the road was usually 4 cubits (1.84-2.00m) and, the height, as for the public road 7 cubits (see Hakim, 1986 for more details).

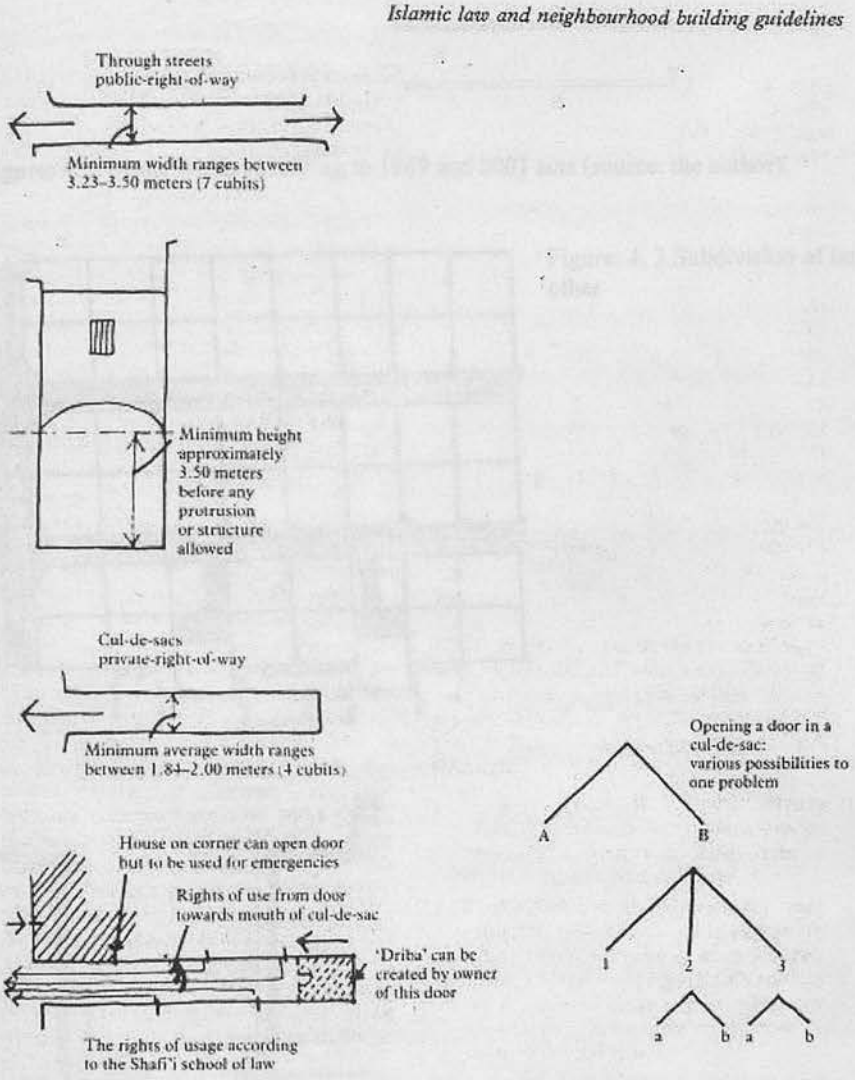


Figure: 4. 1Dimensions of streets in Islamic law. (Source: Hakim, 1986: 21).

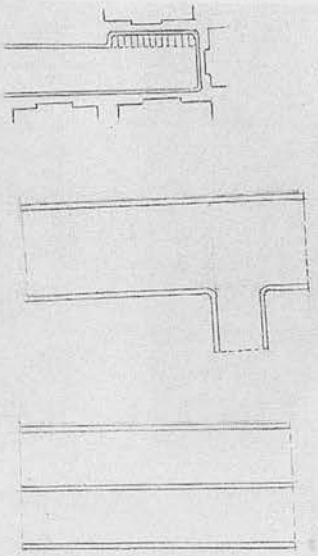


Figure: 4. 2 Street width according to 1969 and 2001 acts (source: the author).

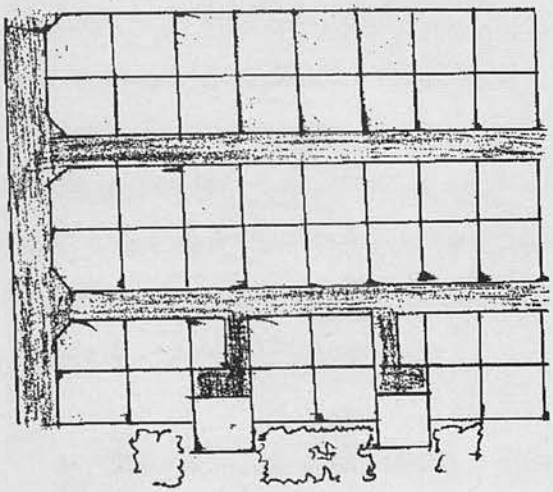


Figure: 4. 3 Subdivision of land all lots face each other

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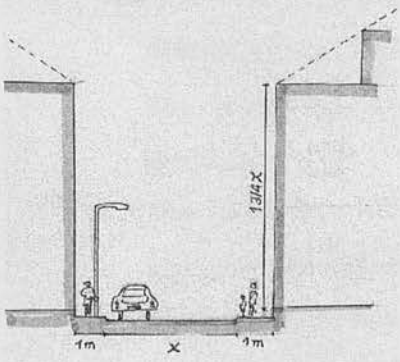
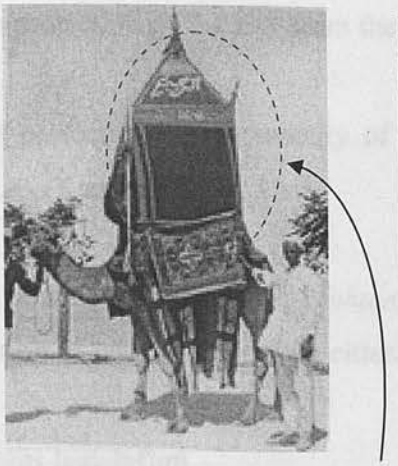


Figure: 4. 4 The relationship between width and the building height.



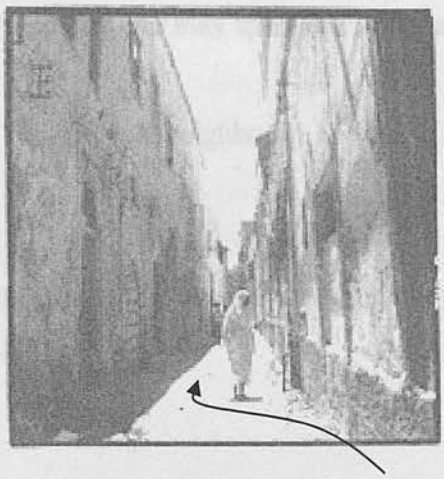


Figure: 4. 5 Camel with a box for a woman (*basour*). Figure: 4. 6 *Zanqa* in Tripoli Old City.
Source: (www.google.com/ Libyan images)

The system of *Al-Hissba* (see Table 4.1) was the practice of the precept of *Al-amer be al-maruof wa al-nahi an al-monker* (enjoining what is right, forbidding what is wrong). This concept of social ethics establishes a good and pro-active relationship between people and the built environment. *Al-Muhtassib* is the title given to the man responsible for applying the concept at many levels; his duties include looking after markets, trading places, merchants' behaviour and supervising the quality and prices of the goods on offer. What is important for this thesis is the type and nature of building legislation implied, and its effect upon social welfare, health and safety in the city. Kamona (2001) states that Islamic law in this area covers:

- The protection of the aesthetic appearance of the city.
- The protection of the roads from different aspects, such as:
  - The projection of buildings onto the road;
  - The protection of pedestrians from merchandise lying cluttering the pavements;
  - The protection of pedestrians from water and sewage that might cause accidents and bad smells;
  - The achievement of privacy between houses; and
  - The relocation of industrial activities away from residential areas that cause pollution.

- The protection of the city from the impacts that may spoil the urban appearance; and
- The protection of the sanctity of houses and neighbours according to Islamic values (Kamona, 2001: 206).

These are the main activities of *Al-Muhtassib* and his team acting as a judiciary system in the application of Islamic law within cities.

4.3.3 Current legislation

These two approaches to regulating the built environment under British-derived legislation and Islamic legislation do not just represent two differing interpretations of the same phenomenon. They differ in their basic interactions and directions. Whereas British legislation is based on master plans and seeks to resolve city-wide problems by requiring people to follow pre-determined building patterns, Islamic law focuses on minimising harm. In effect, the British approach could be defined as prescriptive and inductive, placing theory before practice; the Islamic approach could be called proscriptive and deductive, allowing the urban pattern to emerge from the myriad private acts executed by residents and merchants to the urban fabric.

4.4 Historical context for legislation in Libya

Historically, the planning and building legislation process in Libya can be divided into four stages as follows:

- The traditional Islamic approach and first Ottoman period (645-1835 AD);
- The second Ottoman period (1835-1911);
- The Italian colonial and British administration period (1911-1952); and
- The Libyan national period (1952- present).

These four stages are discussed and analysed in this section to give a broad general view to illustrate the aims and advances in legislation at each stage.

4.4.1 The traditional Islamic approach (645-1835 AD)

In Libya, as in other Islamic countries, the first Ottoman period had an important impact on the layout and design of cities and housing. It is regarded as a 'Golden Age' for the implementation of Islamic law. The old Libyan cities such as Tripoli, Benghazi and Ghadames grew organically in shape and were usually surrounded by a wall with some gates.

Figure: 4. 7 Tripoli Old City.

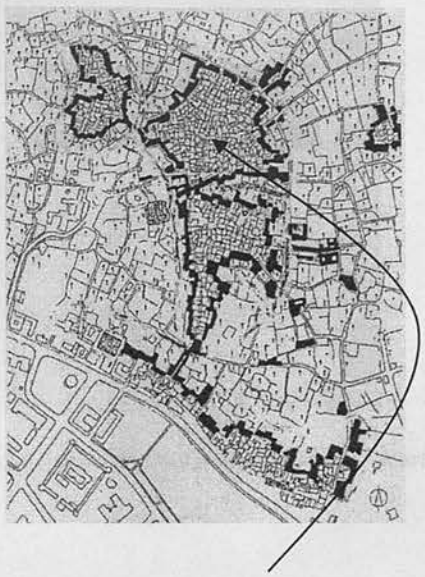


Figure: 4. 8. Ghadames Old City

At the land use level, there was a clear distinction between residential areas and markets to allow more tranquillity and privacy for residential areas. In addition, the markets were divided into secondary markets, according to their produce and activities like craft, vegetables, perfume and carpentry markets as application of the concept *La dherer wa la dhirar* (no harm, whether for your profit or not). The streets were planned in a hierarchal form, moving gradually from public to private with different widths and increasingly tortuous routes. Almost all the houses were of the same height, were inward looking around a courtyard with external walls which had a few high windows for privacy (see Figures 4.3 and 4.4 and Chapter Three for more details).

Generally, this period was characterised by Islamic law which sought to preserve society's values and create harmonious social and physical environments. It embodied

Islamic values in establishing a set of rules that shaped the traditional city. *Al-Muhtassib* and the residents took full responsibility for controlling housing in the cities.

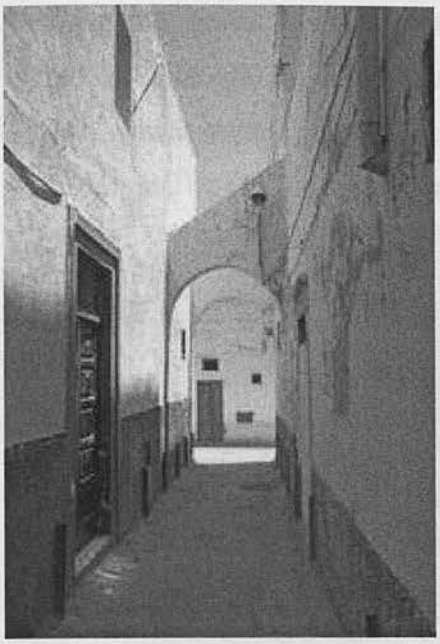


Figure: 4. 9 Tripoli Old City Street.

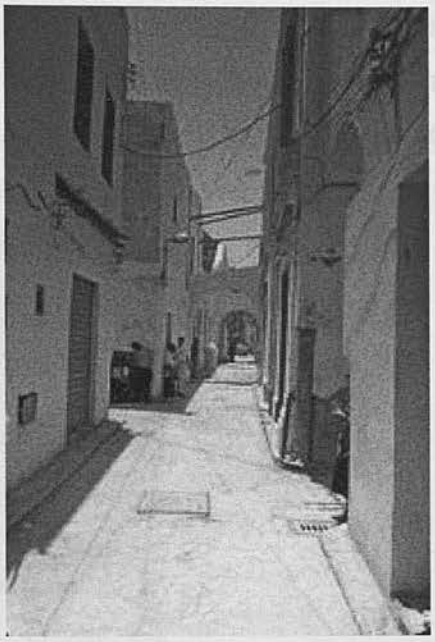


Figure: 4. 10 Tripoli Old City houses. (Source: Warfielli, 1976).

4.4.2 The second Ottoman period (1835-1911)

The second Ottoman period in Libya occurred from 1835 to 1911. In this period, a new authority for organising and controlling the cities was initiated, known as *Sheikh Al-Balad,* (the head of the town) who was a prominent person in the city. *Sheikh Al-Balad* was responsible for the supervision of government projects, such as constructing new roads, the maintenance of old roads, the cleanliness of the city, the maintenance of city walls and levying fees from craftsmen and tradespeople. The heads of artisan and trade guilds helped him in this job. He was directly under the supervision of *Al-Wally* (the head of the estate). With an increase in population prompting the need for city expansion and development, and the engagement of *Al-Wally* on military matters, the Ministry of the Interior (Home Office) in Istanbul felt that the system of *Sheik Al-Balad* was unfit to cover municipal services. It was decided to establish instead departments of municipality in high-density cities and one of them was Tripoli in 1870. These municipal departments oversaw all developments that had been under the supervision of *Al-Wally.* After, the

system of closing Tripoli Old City wall gates at night was cancelled in 1881. The main activities of the Department of Municipality were providing the water supply for the city, cleaning the streets, looking after planting and ensuring good communication. With regard to buildings, the department was responsible for controlling and directing urban growth, which at that time was occuring outside the city wall. The direction of urban extension in Tripoli City was from the main gate, *Bab Al-Minchyaa.*

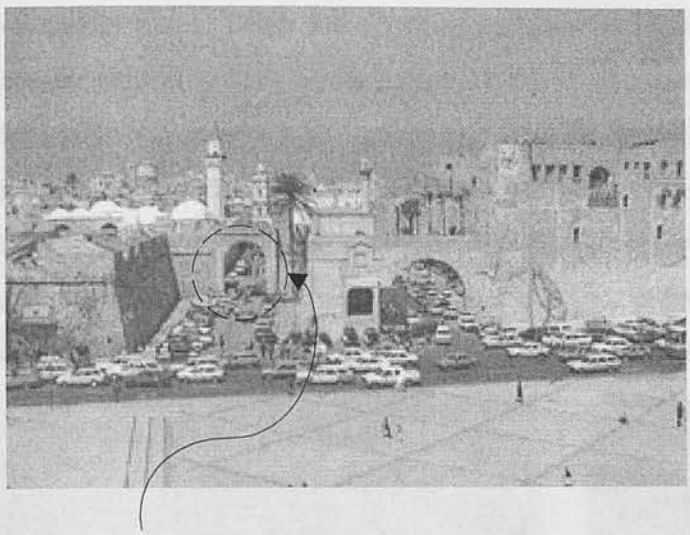


Figure: 4. 11 The gate *Bab Al-Minchyaa.* (source: **www.google/libya/images**).

In the first phase, planning legislation was limited to defining the organisational lines (legal lines for buildings to be built upon) of the main streets and the subdivisions of the streets in residential areas. The width of these lesser streets was between 4 and 6 metres and planned in a straight line. The building height was limited to two storeys (Al-Maulode, 1998: 319).

Generally, this period was characterised by development in municipal management and services. The application of planning and building legislation limited control and was used to direct urban growth and issue building certificates. Moreover, building and planning legislation assigned the responsibility of buildings and the supervision of constructions to the municipality, therefore the building competencies were withdrawn from the local people and given to the government.

4.4.3 The Italian colonial and British administration period (1911–1952)

The Italian colonial and British administration period saw the real beginning of western influence on Libyan building and planning legislation. There was a sudden break from Islamic law, followed by new western legislation which transformed the Libyan built environment in general, and housing in particular. In 1918, the Italian colonial administration arranged a new field survey in two cities, Tripoli and Benghazi, to draw up master plans. These master plans included organising lines for main streets and land use for central sectors where higher blocks of up to seven storeys could be located. This limitation of storeys was transcribed from Rome where, for aesthetical purposes, the parapet decorations were required to be at the same level to present the observer with a tidy and elegant skyline. Nevertheless, this limitation when applied in Libya did not accord to street width, or take account of light and ventilation requirements. The best example of this system is the buildings at *Omer Al-Moktar* Street in Tripoli.

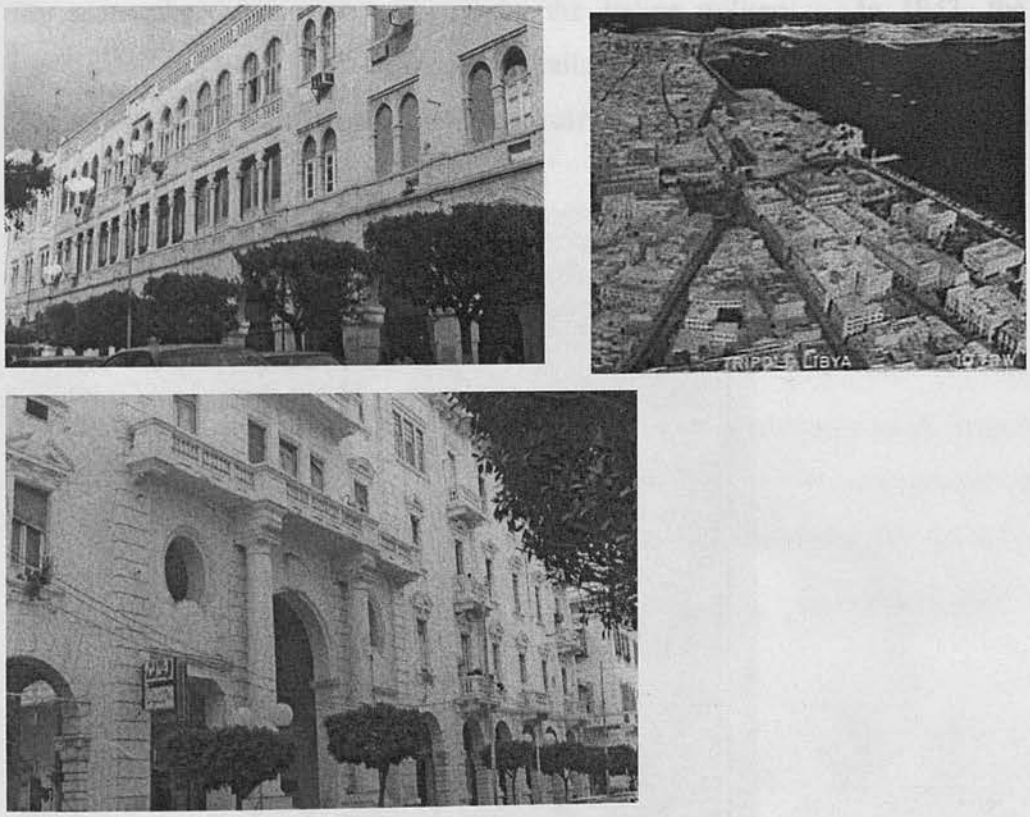


Figure: 4. 12 The influence of the Italian colonial period at *Omer Al-Moktar* Street in Tripoli.

The Tripoli master plan also determined areas for villas which were limited to two storeys and low density areas (courtyard houses) that were extensions of *Hay Belkayer* and *Hay Mazran* from the Ottoman second period. Moreover, light industry and market areas were defined at *Suk Al-Tulta Al-Kadeem* in Tripoli, more gardens areas were located in the Tripoli master plan and a corniche road (seashore road) was constructed. In this same period, the northern and south-western Tripoli Old City walls were demolished and replaced by a road around the old city which made a clear separation between the old city and the new city.

The first Tripoli master plan was prepared in 1918 covering a total 3000 hectares and was accompanied by a schedule for planning and building, like the height of buildings, the conditions and forms of outside buildings and the land use areas. The master plan was finally approved in 1936 by the Italian government, outlining full legal obligations. All city plans thereafter were prepared by the Italian military. In 1943, the British administration (1943-1952) replaced the Italian rule in Tripoli and Barka, in east Libya. Due to the short-lived tenure of British role, Italian building and planning legislation endured (Al-Maulode, 1998: 321).

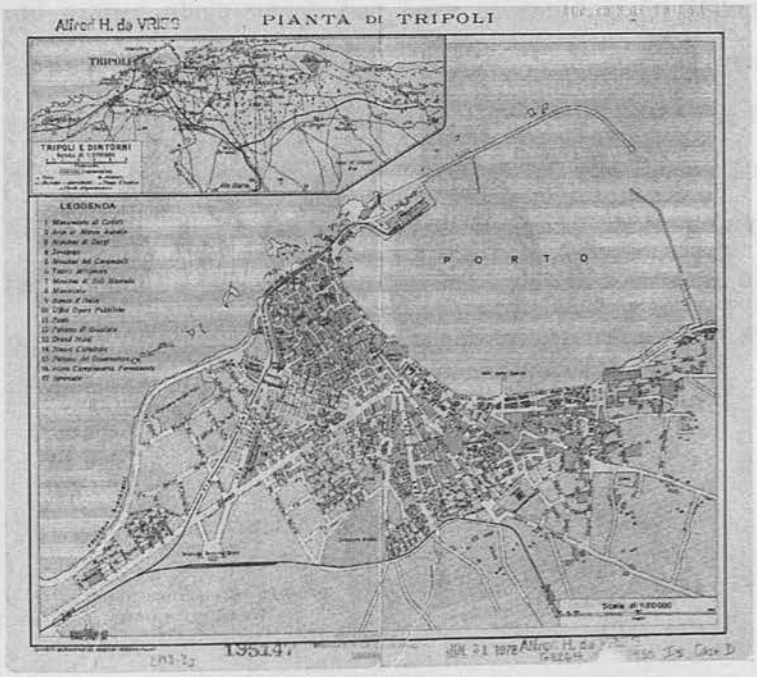


Figure: 4. 13 Tripoli master plan was provided and approved in 1936 by the Italian government. (Source: http://www.lib.berkeley.edu/EART/maps/tripoli.jpg).

Generally, life was unchanged in this British administration period, however, it was marked by the emergence of two kinds of cities: the old one characterised by Islamic law; and new cities built from master plans, new planning and building legislation, and with organised road systems influenced by western legislation.

4.4.4 Libyan national period (1952 – present).

This period is distinguished by comprehensive planning throughout Libya accompanied by many developments in planning and building legislation. Al-Maulode (1998) divides this period into three stages according to the development of planning, and these are:

1) The beginning of urban planning;
2) Basic planning development; and
3) The evaluation of urban planning and its application.

The beginning of this stage of urban planning can be traced from 1952 to 1969, when most Libyan cities saw more urban development as new master plans or extensions of the old master plans which had been prepared under Italian and British Colonial rule. However, this period was also characterised by the emergence of many land subdivisions as residential areas had to accommodate those who came from rural areas into informal residential areas (slums) in the main cities, like Tripoli and Benghazi. The majority of these subdivided areas were characterised by the maximum commercial exploitation of the land and a lack of public facilities. Due to a shortage of municipal architects and the quantity of subdivided areas, they were approved under sweeping but defective master plans.

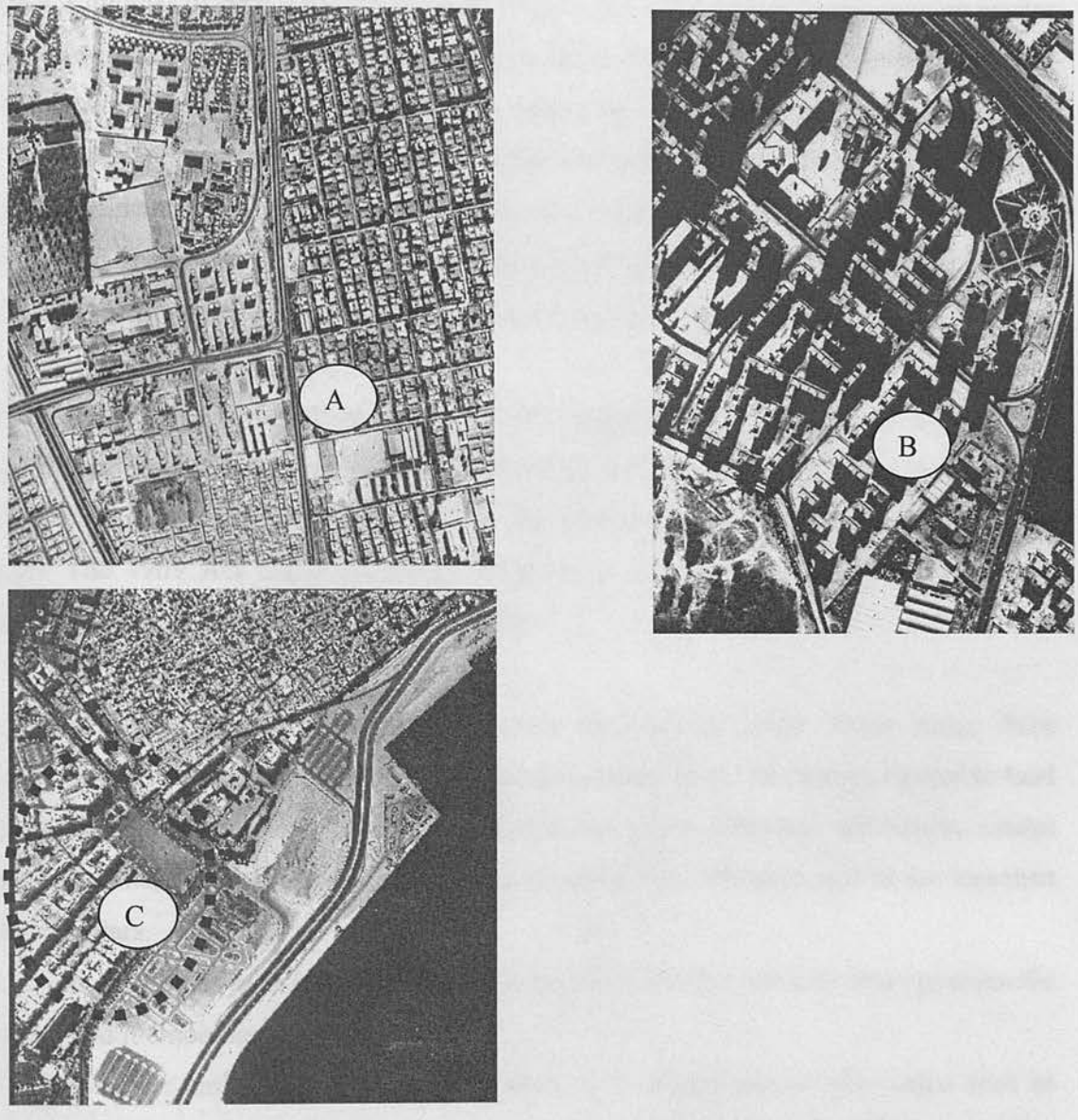


Figure: 4. 14 Tripoli city: A –Housing in the Libyan national period. B -Subdivided area at the beginning of planning development. C –Housing in the Colonial period.

Legislation in this period set out one act for eastern Libya, which had one master plan and a schedule of building regulations for every city. Thus Tripoli city had different building regulations from Benghazi city, which was prepared according to Egyptian building law (Al-Maulode, 1998: 323). The basic planning development started in 1966. The Municipalities Act of 1967 stated that the municipality should take the responsibility for all planning and building matters. In 1966, the Ministry of Planning and Development

made a number of contracts with western consultants' offices to study and prepare master plans for major Libyan cities and established offices such as Decussates for the Benghazi region, Waytng for the Feezan region with Tripoli city and M.M.M for the Tripoli region. These offices prepared master plans according to western planning criteria without taking into consideration the criteria of the traditional built environment, which had always preserved social conventions. The consequence of applying master plans that ordered people to follow new patterns of living resulted in confusion and contradiction.

The Ministry of Municipalities issued the first national comprehensive act for planning and building, called the 1969 Act 5 for planning and organising the cities and villages. This act issued a fundamental legal basis for urban planning to implement any master plan. The 1969 Act contained eleven chapters in an attempt to cover all matters of planning and building legislation, as follows:

Chapter one: embodies six codes and deals with master plans. These range from comprehensive master plans for cities, to general master plans for villages limited to land use and the street network. It includes general definitions, technical definitions, master plan contents, documentation and its length of application, which should be not less than twenty years.

Chapter two: deals with how to prepare master plans and the authority that approves the plans; and it embodies six codes.

Chapter three: embodies five codes and deals with official master plan maps such as streets, open areas, areas for future services (schools, administration buildings etc.). The chapter also alludes to road classification.

Chapter four: embodies five codes and deals with land use and zoning areas, defining building types and their outside conditions. It requires the municipality to issue a schedule for how each zone should be used, and the conditions to be fulfilled in lands and buildings on it, according to the approved master plan. Moreover, this chapter illustrates conditions related only to external building form and density (the density of people or of use) and calculates the influence of these densities on public utilities such as roads, water pipes, sewage systems, electricity and telephones.

Chapter five: embodies eight codes and deals with public utilities (water pipe network, gas pipe network and sewage network) in streets and inside buildings. The municipality is instructed to build and manage these public utilities. Landholders, according to this chapter, should pay 15% of the price of their lands to the municipality, in exchange for improvements to their lands in the execution of public projects and utilities.

Chapter six: embodies sixteen codes and deals generally with land subdivision. It introduces the procedures of subdivision and approval processes. Moreover, this chapter fixes a 35% proportion of the total area of the land needed to be subdivided for the use of public projects and utilities. The municipality is the only authority which can give licences for land subdivision or modifications inside the approved master plan according to conditions mentioned in this chapter. According to code 36 in the Act the minimum width of roads in any subdivision should be 12 metres.

Chapter seven: embodies five codes and is concerned generally with buildings. This chapter deals with building schedules that relate to building conditions and standards, from its elevation, to its interior and it also stipulates the projections of balconies, decorated cornices of parapets, staircase towers and fence walls. These conditions are needed to ensure safety inside the building and lay down minimum or maximum areas that ensure this safety. Conditions for fire safety, for courtyards and ventilation are covered in this chapter.

Chapter eight: embodies six codes and deals generally with upgrading slums and informal areas. For those areas that need to be developed, the municipality should first acquire property from landholders, prepare new plans for it with demarcated areas for public utilities, and then sell it to people as required.

Chapter nine: embodies seven codes and deals with general judgments, for example, the creation of a committee in every municipality to study master plans for the cities and villages inside the municipal boundary and to act to expropriate land for the execution of master plans.

Chapter ten: embodies five codes and deals with punishments and the removal of infringements to the master plans.

Chapter eleven: embodies five codes and deals with interim and final judgments. These judgments treat previous cases that happened before the master plans were established.

The 1969 Act does not embody any codes that deal with disabled people. The Planning and Building Act 2001 presents more detail and modifies specific codes of the 1969 Act.

Libyan planning and building legislation Act 5 (1969)	
Chapter one	Planning regulations.
Chapter two	Prepare and approve master plans.
Chapter three	Official maps (full plans).
Chapter four	Land use and zoning.
Chapter five	Urban infrastructure and public utilities (water pipes, gas network and sewage systems).
Chapter six	Subdivision regulations.
Chapter seven	Building regulations (Schedule).
Chapter eight	Revision planning of slums areas.
Chapter nine	General judgments.
Chapter ten	Punishments.
Chapter eleven	Interim and final judgments.

Table: 4. 2 The contents of Libyan building and planning legislation Act 5, 1969. (Source: the author).

Structure of Law	
UK Building Regulations	
Part A	Interpretation and general- procedures and application of regulations to buildings, materials, etc.
Part B	Materials.
Part C	Preparation of site and resistance to moisture protection of walls.
Part D	Structural stability- calculation of live and dead loads and for wind.
Part E	Safety in fire.
Part F	Thermal insulation - maximum U values for walls, floors and

	perimeter walling.
Part G	Sound insulation – walls, floors, measurement of sound transmission.
Part H	Stairways, ramps, balustrades and vehicle barriers.
Part J	Refuse disposal – containers, chutes, hoppers.
Part K	Open space, ventilation and height of rooms.
Part L	Chimneys, flue pipes, hearths and fireplace recesses.
Part M	Heat-producing appliances and incinerators – clean air.
Part N	Drainage, private sewers and cesspools – SPs, vents, RWPs and gutters.
Part P	Sanitary conveniences – water closets, urinals, earth closets.

Table: 4. 3 Structure of building regulation in UK. (Information from Harper, 1978; compiled by the author).

Current legislation: comparison between Libya and UK			
Libya **Integrated legislation**		**UK** **Differentiated legislation**	
Planning: +	Land use and zoning. Subdivision of lands.	Planning	External space. Amenity. Land use.
Building: +	Securing the health, Safety and welfare in buildings.	Building	Securing health, safety, welfare and convenience in or about buildings. Conservation of fuel and power. Conservation of environment; contamination of water and
Housing:	Securing the health,		preventing waste.

	ventilation, safety and aesthetical appearance in houses. Controlling height, density, and building licence for houses.	Housing	Securing public health; ventilation and open spaces around residential dwellings. Control of street widths and the height. Protecting the structure and layout of buildings.

Table: 4. 4 Comparative legislation between Libya and the UK. (Source: the author).

Comparative legislation between Islamic law and Libyan Acts (1969 and 2001)		
	Islamic law	**Acts 1969 and 2001**
Building area:	No written codes or rules for building area.	Clear codes for building area in different zones according to density in land use.
Subdivision:	The areas of the lots were divided according to the real needs of users and it depended on the economic status of the owners.	Pre-planned according to land use and specific codes to get maximum economic benefit from the land.
Building height:	No rules mentioned about building height. It allows for the owner to build to any height on the condition that it does not cause any harm to his neighbours.	The maximum height differs according to the district density (i.e. R1-R7) and should not be more than 1¾ width of the road. It might exceed the height by setting the highest point of the building back as a patio of 2:3 on the horizontal level on the maximum height permissible. Generally, the maximum height should not be more than 50 metres for all buildings. 2.70 metres as a minimum clean floor height of housing.
Rooms and windows area:	No rules mentioned about rooms and window areas. It allows for the owner to build any area that accommodates his family and guests with a minimum one room for girls and one for boys.	Rooms that will be occupied, such as bedrooms should have windows with a minimum area ⅛ of the room area on the ground floor and 1/10 of the room area on the upper floors. For other rooms, such as

	The window area depends upon their location if they are outward they should be small and high; if they are inward, it allows them to be larger but not high.	bathrooms, kitchens, staircases, and corridors, the minimum area should be ½ square metres. Minimum kitchen area 8 square metres, with minimum width 2 metres. Minimum bathroom area should be 5 square metres with minimum width 1.80 metres. Minimum toilet area should be 1 square metre with minimum width 1.20 metres.
Roads:	Streets and public-right-of-ways can have minimum widths ranging from 3.23-3.50 metres (7 cubits). Cul-de-sacs and private-right-of-ways can have a minimum average width ranging from 1.84-2.00 metres (4 cubits).	Local road widths range from 8-12 metres with pathways from 1 to 2 metres. Collectors' road width can range between 15-20 metres with pathways from 2.5 to 4 metres. Main collector road width can range from 20-25 metres with pathways from 2.5 to 4 metres.
Setback:	No rules mentioned about setback from road due to compact housing built form and inward looking.	For all lots with an areas 1000m², the front setback can be 4 metres; side and rear setbacks 3 metres. For all lots with an area 600m², the front setback 3 metres, side and rear setbacks 3 metres. For lots with an area 400m², the front setback 3 metres, side and rear setbacks 3 metres. For lots with an area 300m², front setback 3 metres, side setback 0 metres and rear setback 3 metres. For lots with an area 180m², front setback 3 metres, side setback 0 metres and rear setback 3 metres. For lots with an area 500m², front setback 3 metres, side and rear setbacks 4 metres.
Building form:	Irregular forms evolved according to local customs and traditions at building and planning levels.	Pre-planned layouts and designed to ensure standardised form.
Basic evaluation of	Islamic law evaluation based on the results of social benefits from application of the concept '*La dherer*	Current law evaluation based on the results of economic benefit from land use and health benefits for residents more than social

the law:	*wa la dhirar*' (No harm, whether for your profit or not) rather than for economic benefit.	benefits.

Table: 4. 5 Comparison between Islamic law and Libyan Acts (1969 and 2001). (Source: the author).

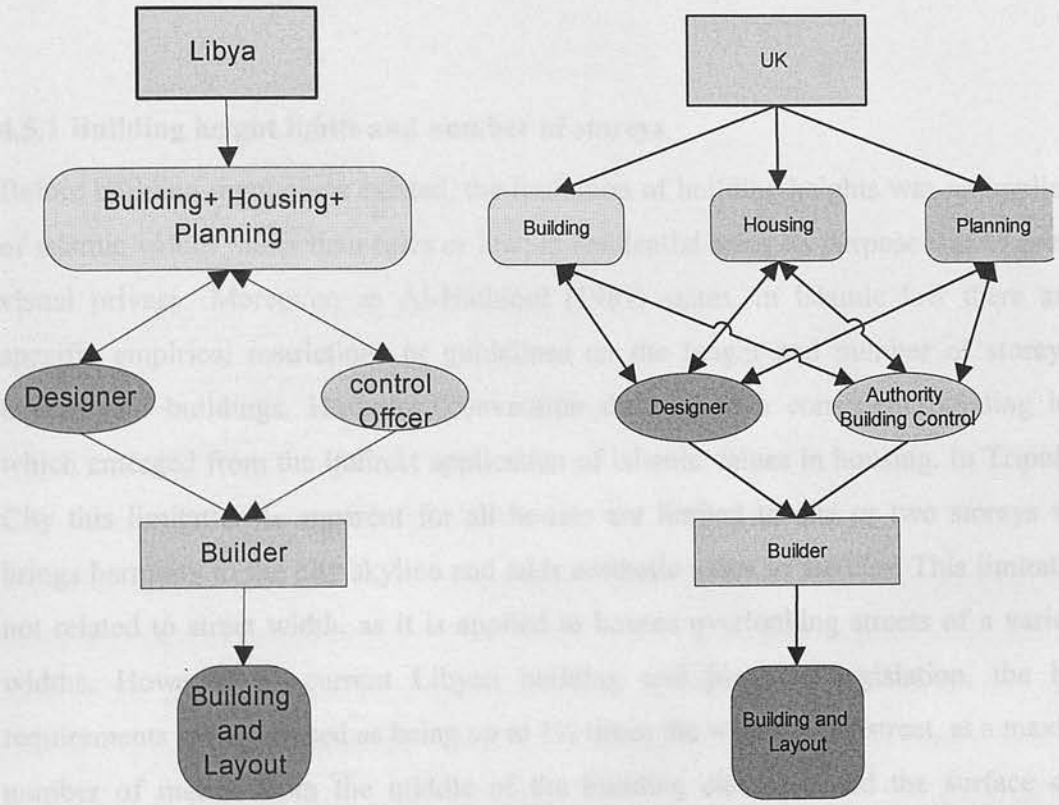


Figure: 4. 15 Comparison of Libyan planning and building (integration) legislation with UK planning, housing and building (segregation) legislation. (Source: the author).

4.5 Main components of Libyan planning and building legislation influencing public housing

There are numerous categories or components of planning and building legislation. This section focuses on the specific components that are involved in the relationship between public housing form, the society's culture and ways of living. Overall, these components are defined and analysed according to the case study context of the Libyan environment. These components consist of the following:

1. Building height limits and number of storeys;
2. Yards and setback requirements;
3. Parapet and fence height requirements;
4. Site coverage limits; and
5. Floor to space ratios.

4.5.1 Building height limits and number of storeys

Before building regulations existed, the limitation of building heights was an application of Islamic values rather than rules or law; in residential areas its purpose was to preserve visual privacy. Moreover, as Al-Hathloul (1981) states, in Islamic law there are no specific empirical restrictions or guidelines on the height and number of storeys for houses and buildings. However, convention determined a consistent building height which emerged from the indirect application of Islamic values in housing. In Tripoli Old City this limitation is apparent for all houses are limited to one or two storeys which brings harmony to the city skyline and adds aesthetic value to the city. This limitation is not related to street width, as it is applied to houses overlooking streets of a variety of widths. However, in current Libyan building and planning legislation, the height requirements are expressed as being up to 1¾ times the width of the street, at a maximum number of metres from the middle of the building elevation and the surface of the footpath (if found) or from the level of the surface of the road, to the highest point of the elevation and in a maximum number of storeys, according to zoning type area.

New housing projects, particularly public houses, of different building heights can be located in one site due to different zoning areas. This situation has led to a lack of privacy in the houses and apartments that vary in height (see Figure 4.16).

Figure: 4. 16 Different housing heights in Tripoli (Case study *1Hay Alakwakh*). (Source: the author).

4.5.2 Yards and setback requirements

The relationship between residential buildings and space is one of the main problems many legislations have to deal with. Yards and setbacks allow enough light, air, sound control and privacy for interior spaces to be achieved, to control overcrowding and to reduce fire hazards. The London Building Act 1844 was the first act in the UK to embody open space in housing areas. This idea was developed further in the 1894 Building Act to improve the health in working-class dwellings, using setbacks from the building line to make the width of the street equal to the height of the houses (Babcock quoted by Alhemaidi, 1996).

Setback requirements are classified into front, side and rear yards. These setbacks are covered in most planning legislation (Leary, 1968). The application of setbacks differs from one zone to another, according to density and function whether residential, commercial or industrial. Some building types, such as row houses need only front and rear yards. These yards in residential areas of Libya have many uses, as gardens, sitting areas, off-street parking and children's playgrounds. The Libyan Planning and Building Act 1969 illustrates the different distances of these setback requirements (front, side and

rear), particularly in residential areas, according to the land-use and density of the area as determined in the master plan. However, in Libyan traditional houses, such setbacks were not required as all aims were fulfilled by the courtyard.

4.5.3 Parapet and fence height requirements

The roof parapets of the Libyan traditional houses, as in most Muslim cities were built to be more than two metres to protect the residents from being overlooked by neighbours. Family members tended to use these roofs for sleeping or socialising in the evening, particularly throughout the summer period (see Figure: 4.17). On the other hand, the Planning and Building Act 1969 demonstrates that the roof parapet should be not less than 90 centimetres (code 20:9). This limit gives permission to designers to make the parapet in most public houses from 0.9–1.20 metres to reduce the cost without considering residents' values. Fence heights in the 1969 Act are specified in code 55 where the maximum height of fences between bordering plots should not be more than 1.80 metres and the upper fences that face on to public roads should be built with oriels (*mushrabiyah*). This height is not sufficient to preserve privacy inside the yards from overlooking passers-by. This situation leads people to modify and augment the height of their fences (see Figure: 4.18). On the other hand, public housing blocks are constructed without fences.

Figure: 4. 17 Housing parapet heights in Tripoli (Case study 1*Hay Alakwah*)
(Source: the author).

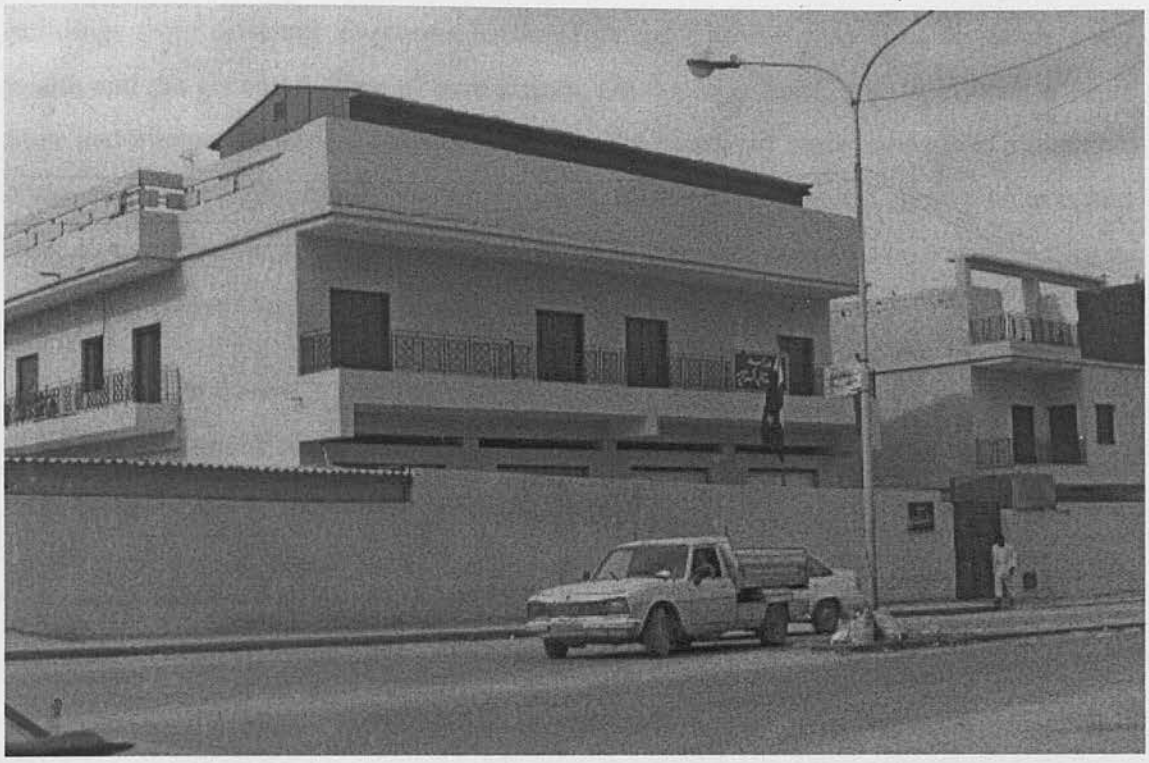


Figure: 4. 18 People modify and augment the height of their fences. (Source: from Greefa).

4.5.4 Site coverage limits

The Planning and Building Act 1969 defines site coverage limits as the area of plot which is occupied by building at ground level and the coverage of land ratio to total area of a plot is known as the ratio of the coverage. The aims of using site coverage limits in planning legislation are illustrated in the 1969 Act as follows:

- To control the mass of the building.
- To prevent harm to neighbours' houses such as air, privacy and sunlight.
- To avoid overdevelopment.

These aims are directly related to population density limits in any residential zone, where these should not go beyond the upper limits for utilities' provision such as water, electricity, sewage systems, telephone lines etc and public services such as schools, commerce, open spaces and children's playgrounds. In addition, site coverage limits aim

to avoid congestion in the streets by controlling the number of cars and ensuring access to buildings from different directions for fire fighters. The Act also aims to secure good health and the general welfare of each citizen. On the other hand, the site coverage limits have had a negative impact on land usage, for the increased areas needed for plots have consumed more agricultural land and exposed buildings to climatic factors of heat and dust, as compared with the traditional Libyan cities which were built in a compact form. Islamic law makes no mention of any maximum site coverage limits.

4.5.5 Floor to space ratios

"Residential density is a system of measurement expressing in mathematical terms the number of people (population density) or the amount of housing (accommodation density) in a specified area of land" (Ratcliffe, 1978: 293). Floor to space ratio is one among a number of devices used to measure the control of density in residential areas. These ways, as Ratcliffe (1978) points out are as follows:

- Dwelling units per hectare;
- Number of residents per hectare;
- Habitable rooms per hectare;
- Bed spaces per hectare; and
- Floor space (Ratcliffe, 1978: 294).

Floor to space ratio is the relationship between the area of permitted floor space in a structure and the area of the lot on which it is situated (Leary, quoted by Alhemaidi, 1996: 62). The 1969 Act indicates four categories for dwelling districts of very low, low, medium and high density with ratio limits of 0.4, 0.5, 0.6, 0.7 and 0.8 respectively. The findings of Al-Maulode (1998) in his study of 50 master plans of different Libyan cities are shown in Table 4.6. The ratio of residential districts to the total area of the master plans was between 40% to 65% and the urban density in the cities with a population not less than 100,000 was not less than 45 persons in one hectare with 60% as the average urban density. The residents' density (ratio of number of resident in the residential area to

the total area of the residential area) was not less than 100 persons, with an average 130 persons per hectare.

Type of residential	No of houses in 1 hectare	No of residents in 1 hectare	Plot area in metre square		
			maximum	minimum	average
Very low R1	10 – 14	60 – 70	900	640	750
Low R2	15 – 20	75 – 100	600	450	500
Low R3	21 – 26	105 – 135	430	350	390
Medium R4	27 – 40	135 – 200	330	225	280
Medium R5	40 – 80	160 – 280	225	115	170
High R6	80 – 100	280 – 400	115	90	100
High R7	More than 100	More than 400	Less than 90 metres square		

Table: 4. 6 Density and plot area in a Tripoli residential area (source: information from Act 1969 and Act 2001 and Al-Mulody1998: 453-454; compiled by the author)

4.6 Specific codes and legislation addressed in the thesis

This section gives the specific codes from the buildings schedule of Tripoli city as a supplementary and illustrates part of Libyan planning and building legislation Act 5 (1969) that the author considers plays an important role in public housing generally, and in Tripoli as a case study. These codes are given in full, translated from Arabic to English. Then an explanation of why these were chosen is given and a discussion of their impact upon housing form and design is provided.

The buildings schedule of Tripoli city embodies five chapters and seventy-eight codes. The first chapter deals with building application procedures and permissions and embodies 13 codes.

Chapter two deals with general health and technical issues. *First*: height, which embodies 5 codes (codes 14 to 19). *Second*: light and ventilation (codes 20 to 29). *Third*: courts and skylight (codes 30 to 35). *Fourth*: staircases (codes 36 to 38).

Chapter three deals with specific health and technical issues that should be provided in cultural, social and leisure buildings. Code 39 gives a definition of what constitutes cultural, social and buildings for entertainment buildings. *First*: safety and assurance terms (code 40). *Second*: light, health and ventilation terms (codes 41 to 46).
Chapter four deals with secondary and completing building (i.e. garages and garden walls) (codes 47 to 55).
Chapter five deals with follow-up and inspection processes (codes 56 to 78).

The author believes the following codes, are important rules in formulating public housing in the Tripoli case studies that make a clear separation between old and new houses at both design and planning levels. These codes will be examined in the three case studies later.

Code 15:

The height of any building at the side of a public road should not be more than 1¾ of the distance between the edges of the road if they are parallel. If the edges of the road are not parallel, the height should be 1¾ the average of the road edges in front of the elevation of the building and vertical to it. Generally, the total height of the elevation should not be more than 50 metres. The height should be measured from the middle of the building elevation and the surface of the footpath (if found) or from the level of the surface of the road to the highest point of the elevation.

Code 15 fixes the height of any building on a public road as not more than 1¾ of the distance between the edges of the road. In Libya, a hot and dry country, this causes less shade for the external walls of neighbours houses, for pedestrians and more heat gain inside the houses that comes directly from the sun or reflected from the road asphalt. In the traditional built environment of Tripoli Old City, the width of the road was determined according to its function and considerations were given to the vagaries of the local climate.

Code 16:

It is possible to exceed the height in code 15 by setting the highest point of a building back as a ratio of 2:3 on the horizontal level, on the maximum height permissible.

In this code, the designer has the right to extend the height of the building by setting back the built spaces on a patio of 2:3 without putting any strict requirements on the designer to consider the effect on neighbouring houses, such as privacy. This code only concerns how much sunlight reaches the street level and is a preference of northern and western countries where more heat is welcomed.

Code 20:

Buildings should have the following dimensions:

1. The width of the main doors of the blocks should not be less than 1.40 metres.
2. The width of the main doors of the flats and individual houses should not be less than 1.10 metres.
3. The width of the doors of the shops should not be less than 1.60 metres.
4. The height of the main doors of the flats and houses should not be less than 2.20 metres.
5. The height of the internal room doors should not be less than 2.10 metres.
6. The width of the internal room doors should not be less than 0.90 metres.
7. The width of the bedrooms should not be less than 2.50 metres.
8. The width of the internal passage should not be less than 1.20 metres and the maximum length of the internal passage, without direct natural light should be 9.0 metres.
9. The height of the roof parapets, staircase handrails, balcony rails and the window levels should not be less than 0.90 metres.
10. The thickness of the external walls should not be less than 25 cm on the ground floor and 20 cm for the upper floors; and the thickness of the internal walls inside the flats should not be less than 20 cm.

Code 20 concentrates more on the dimensions necessary to ensure the safety of users of buildings. The height of roof parapets should be more than 2.0 metres if family members use it to achieve privacy. The thickness of the walls should be limited to the kind of material which will allow good heat and sound insulation. These days, designers have many choices of building materials that fulfil heat and sound insulation with different thicknesses. These choices should not be limited by this code.

Code 21:

In a house, all bedrooms should have windows for light and ventilation opening directly to the public road or to a garden or courtyard, with an area not less than ⅛ of the room's area on the ground floor and 1/10 of the room's area on the upper floors.

The window area should not be fixed only according to the area of the room and for light and ventilation, as stated in code 21. Many other factors impact on the area calculation, such as heat gain and loss, or socio-cultural values such as visual and auditory privacy. Moreover, window areas and their heights differ from one country to the next according to climate and socio-cultural rules. In Libyan old cities, the outside window areas should be small and high, whereas the inside one that opens to the courtyard should have a larger area and less height (see Figure 4.3).

Code 22:

Other parts of the houses not designated for residence, like bathrooms, kitchens, staircases, entrances and passages are to be ventilated with windows with an area not less than ½ metre square opening onto a small courtyard of at least (3×3) metres.

Code 24:

Every house with four rooms or less should have one bathroom with an area not less than 5 square metres and not less than 1.80 metres wide. This should include a washbowl,

bathtub or shower and flush toilet. The internal walls of the bathroom should be covered by glazed tiles or any other washable material up to not less than 1.50 metres in height. Houses with more than four rooms should have one bathroom and one WC. The area of the WC should not be less than one square metre with a width of not less than 1.20 metres.

Code 25:

Every house should have a kitchen with a minimum area of 8 square metres with width not less than 2 metres.

Code 38:

It is permitted to use the front yards or to protrude onto them in the following instances:

1. The use of the yard or the garden can be used as a sitting area on condition that it should not be covered.
2. Chimneys, columns and decorations are permitted to protrude into the yard but by not more than 50 cm;
3. Uncovered balconies are permitted to protrude over the yard on condition that the protrusion should not be more than ¼ the width of the yard and the depth of the yard should not be less than 3 metres.
4. Towers are permitted to protrude into any yards which are not less than 4 metres wide. The projection may be not more than 1/6 of the yard and it is permitted to build towers and open balconies on front yards whatever its width, on condition that the projection is not more than 1/3 the width of the yard.

Code 39:

In the case of building, modifying or changing the use of any kind of existing building, this should respect the dedicated areas for the yards in the zoning areas and should leave these open to the sky.

Code 44:

R1- single-family residential district (very low density).

1. Minimum plot area is 1000 square metres.
2. Minimum width for the plot is 25 metres.
3. Maximum depth of the plot should not be more than 2½ the width of the plot.
4. Minimum setback for front yard should be 4 metres.
5. Minimum setback for side yard should be 3 metres.
6. Minimum setback for back yard should be 3 metres.
7. Maximum total roof area to be 40% (of the total plot area).
8. Maximum height of the building to be 12 metres.

R2 – single-family residential district (low density).

1. Minimum plot area is 600 square metres.
2. Minimum width for the plot is 20 metres.
3. Maximum depth of the plot should not be more than 2½ times the width of the plot.
4. Minimum setback for front yard should be 3 metres.
5. Minimum setback for side yard should be 3 metres.
6. Minimum setback for back yard should be 3 metres.
7. Maximum total roof area to be 50%.
8. Maximum height of the building to be 8.50 metres.

R3 – single-family residential district (low density).

1. Minimum plot area is 400 square metres.
2. Minimum width for the plot is 18 metres.
3. Maximum depth of the plot should not be more than 2½ times the width of the plot.
4. Minimum setback for front yard should be 3 metres.
5. Minimum setback for side yard should be 3 metres.
6. Minimum setback for back yard should be 3 metres.
7. Maximum total roof area to be 60%.

8. Maximum height of the building to be 8.50 metres.

R4 – double-family residential district (medium density).

1. Minimum plot area is 300 square metres.
2. Minimum width for the plot is 14 metres.
3. Maximum depth of the plot should not be more than 2½ times the width of the plot.
4. Minimum setback for front yard should be 3 metres.
5. Minimum setback for side yard should be 0 metres.
6. Minimum setback for back yard should be 3 metres.
7. Maximum total roof area to be 70%.
8. Maximum height of the building to be 8.50 metres.

R5 – family residential district (medium density).

1. Minimum plot area is 180 square metres.
2. Minimum width for the plot is 12 metres.
3. Maximum depth of the plot should not be more than 2½ times the width of the plot.
4. Minimum setback for front yard should be 3 metres.
5. Minimum setback for side yard should be 0 metres.
6. Minimum setback for back yard should be 3 metres.
7. Maximum total roof area to be 70%.
8. Maximum height of the building to be 7.50 metres.

R6 - family residential district (high density).

1. Minimum plot area is 500 square metres.
2. Minimum area of land for each flat is 80 square metres.
3. Minimum width for the plot is 18 metres.
4. Maximum depth of the plot should not be more than 2½ times the width of the plot.
5. Minimum setback for front yard should be 3 metres.
6. Minimum setback for side yard should be 4 metres.
7. Minimum setback for back yard should be 4 metres.
8. Maximum total roof area to be 80%.

9. Maximum height of the building to be 14 metres.

R7 - family residential district (high density) blocks.

1. Minimum plot area is 300 square metres.
2. Minimum area of land for each flat is 60 square metres.
3. Minimum width for the plot is 14 metres.
4. Maximum depth of the plot should not be more than 2½ times the width of the plot.
5. No minimum setback for front yard.
6. No minimum setback for side yard.
7. No minimum setback for back yard.
8. Maximum total roof area to be 400%.
9. Maximum height of the building to be 27 metres.

Zone	**Min- lot area (m)²**	**Min- lot front (m)**	**Max- lot width**	**Setback**			**Site coverage**	**Building height (m)**
				front	side	rear		
R1	1000	25	2½ lot width	4	3	3	40%	12
R2	600	20	2½ lot width	3	3	3	50%	8.5
R3	400	18	2½ lot width	3	3	3	60%	8.5
R4	300	14	2½ lot width	3	0	3	70%	8.5
R5	180	12	2½ lot width	3	0	3	70%	7.5
R6	500	18	2½ lot width	3	4	4	80%	14

R7	300	14	2½ lot width	0	0	0	400%	27

Table: 4. 7 Density, plot area, setback, and building height. (Source: information from Act 1969 and Act 2001; compiled by the author).

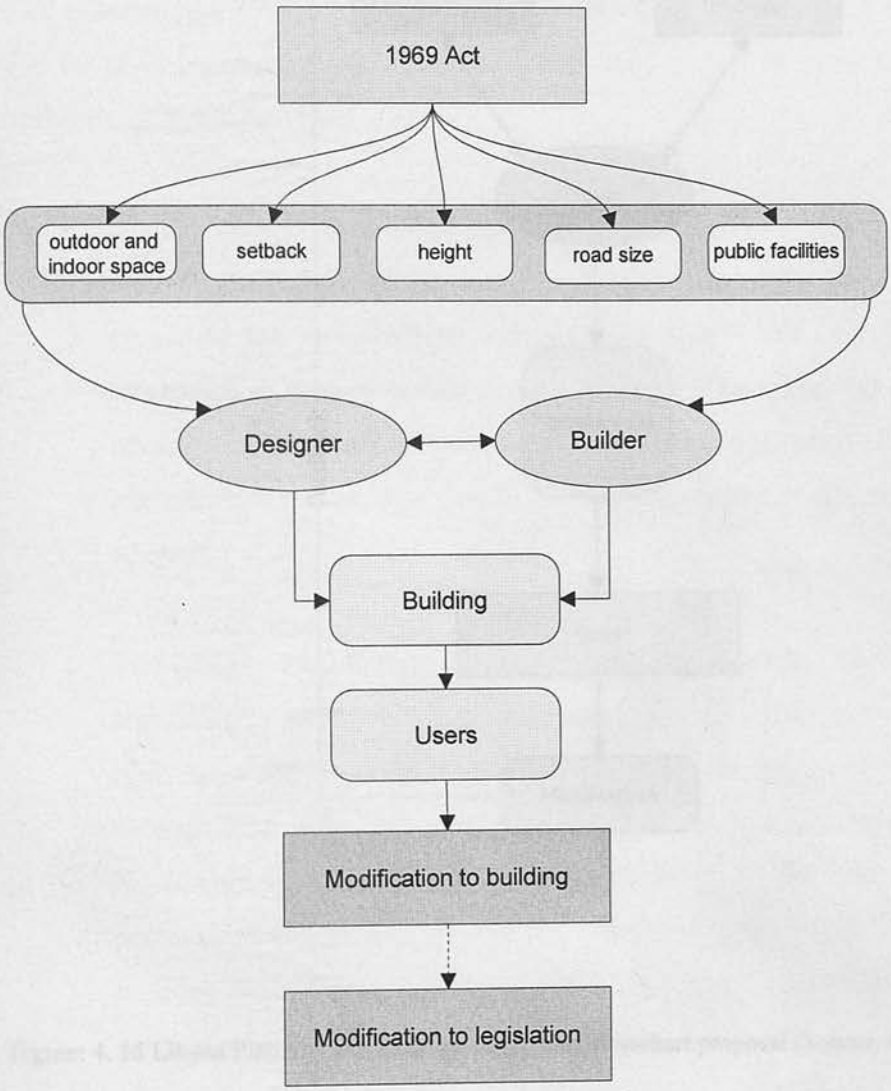


Figure: 4. 19 Libyan Planning and Building Act 1969 flowchart proposal (Source, the author).

Planning and Building conceptual flowchart proposal

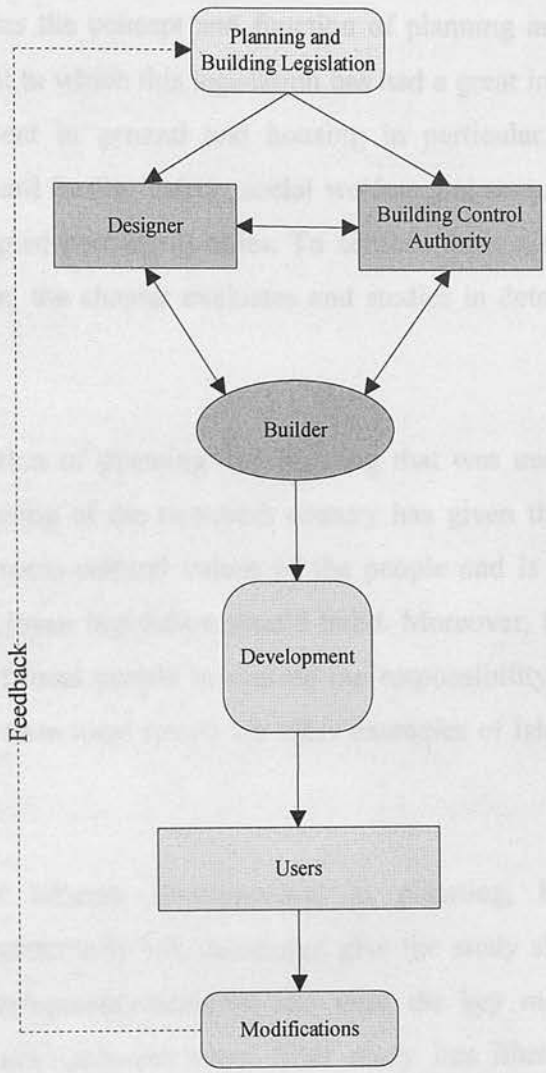


Figure: 4. 16 Libyan Planning and Building conceptual flowchart proposal (Source, the author).

4.7 Conclusion

This chapter investigates the concept and function of planning and building legislation and examines the extent to which this legislation has had a great impact on the formation of the built environment in general and housing in particular. Overall, the aim of legislation is to safeguard health, safety, social welfare and security in society through well-planned and designed housing in cities. To achieve these aims in Libyan planning and building legislation, the chapter evaluates and studies in detail the legislation from different approaches.

- Islamic legislation of planning and building that was used in Tripoli Old City until the beginning of the twentieth century has given the city its identity and preserved the socio-cultural values of the people and is a good foundation on which future Libyan legislation should build. Moreover, the control system and participation of local people in sharing the responsibility of looking after their environment within local streets are other examples of Islamic law that could be adopted.

- The study of western developments in planning, building and housing legislations', particularly UK legislation give the study significance in terms of how these developments occurred and what the key motivations and reasons behind these developments were. This study has illustrated that any future legislation should emerge from the society's needs. The current legislative comparison between Libya and the UK clarifies the similarities and differences between them. Many codes in current Libyan legislation have been adopted from western countries.

Through reviewing and analysing Libyan planning and building legislation, some defective issues appeared as well as many important issues which are not addressed within it. These issues include giving less consideration to climate where no specific codes addressed building materials that deal with local climate, as well as the orientation of windows and the dwelling itself, future extension, the number of spaces within a

dwelling and the conflict with socio-cultural norms such as privacy that comes from application of setback, site coverage limits, balconies and the absence of a hierarchical order in the streets network (private, semi-private, semi-public and public). There is an absence of specific codes that deal with location and which would let new housing projects to be more connected with the city and less segregated.

There is a need to pass new legislation in order to address the shortcomings of redevelopment and bridge the gap in current Libyan legislation with particular regard to:

1) Reconsidering traditional planning principles, such as mixed use that encourages people to live together and have equal access to services and facilities and revising urban planning by modifying the codes that help to achieve these principles.
2) Classifying the residential areas by land use codes into different densities, such as R1- R7 would help to integrate different income groups and not have them residing within the one place which creates disharmonic neighbourhoods. These need to be redeveloped.
3) Providing codes that help to design suitable spaces in housing (number and size) to accommodate Libyan families.
4) Reconsidering the natural environment, economy and socio-culture to achieve sustainable development within housing.

The chapter calls for the study of important issues relevant to good building legislation, such as human needs, sustainable development and the importance of segregation and integration in housing design since Libyan families' way of life demands enough segregation inside the house and good integration with social activities outside the house. The next chapters will study these issues in more detail.

Chapter Five

Motivation Models

Chapter Five

Models of Human Needs

5.1 Introduction

The object of this chapter is to extract the key theoretical issues from these models and to apply them to a legislative context. This chapter will present different models of human needs. Human needs determine most human behaviour. These needs have a huge influence on control and direct human behaviour. Human needs in a housing context, could be related to space within each housing unit. The life of an individual and family unfolds in the space within the home and urban areas. To formulate good domestic spaces, human needs and their being satisfied, should be recognised. The way of gratify these housing needs differs from person to person and from society to society depending on their cultural values, lifestyle, climate, technological conditions and economic situation.

The study considers that planning and building legislation which embodied all human needs would help to create a habitable environment. In order to achieve that, analysing and understanding human needs in housing should be done, after that, people's individual needs should be considered including their culture.

The research methodology which was stated earlier would lead to inculcating an attitude and building a body of knowledge from which legislators will benefit in shaping and producing detailed housing legislation. The author believes that theories of human needs are one of the issues that Libyan housing legislation needs to address. The author attempts, from studying models of human needs, to formulate a set of criteria that will help to inform other areas and to establish good legislation that will lead to better housing in Libya. Furthermore, this chapter attempts to find a good link between the concept of human needs and planning and building legislation. The implication of

improved legislation which accommodates human needs' theories will help a standard of housing to emerge which is related more to people's aspirations.
The aim is to identify through these theories all valuable aspects that need to be addressed and which can be expected to make a good contribution to the legislation. Studying and understanding human needs will help to build detailed planning and building legislation and help to gratify these needs through revised legislation. Sequentially to achieve these aims the author is going to introduce four models' of human needs motivation theories.

This chapter introduces and compares four models that address human needs from different perspectives to gain a good understanding of the theoretical and contextual background. This is followed by an attempt to ensure that these needs in planning and building legislation are satisfied.

5.2 Origins of motivation theories

Over the years, many theories have been proposed attempting to describe the various sources of motivation which determine individual behaviour. These content theories all propose a limited set of motivation sources, some arranged in a hierarchy, others viewed as developmental stages (Scholl, 2002).

These theories presented the importance of human needs as motivations behind any behaviour. Moreover behaviour is both directed to, and results from, unsatisfied needs. Luthans (1992) defines motivation as "a process that starts with a physiological or psychological deficiency or a need that activates behaviour or a drive that is aimed at a goal or incentive". He points out that "the key to understanding the process of motivation lies in the meaning of, and relationship between, needs, drives, and incentives" (Luthans, 1992: 147).

Human needs are an important part of human nature. Values, beliefs, and customs differ from country to country and group to group. Abraham Maslow proposes that all humans have universal needs.

This section views and compares four main theories since the author believes that these theories can be expected as was explained earlier, to give a good understanding of human needs and this available information can be used to build legislation. The section focuses on the contributions of sociologist Abraham Maslow and his concept of hierarchy of needs. The section will continue by exploring the evolution of that concept by three other theorists. These theories are as follows:

- Maslow's hierarchy of needs; 1954
- Motivator-hygiene model (Herzberg); 1959
- Achievement motivation model (McClelland) 1961 and
- ERG model (Alderfer).1972

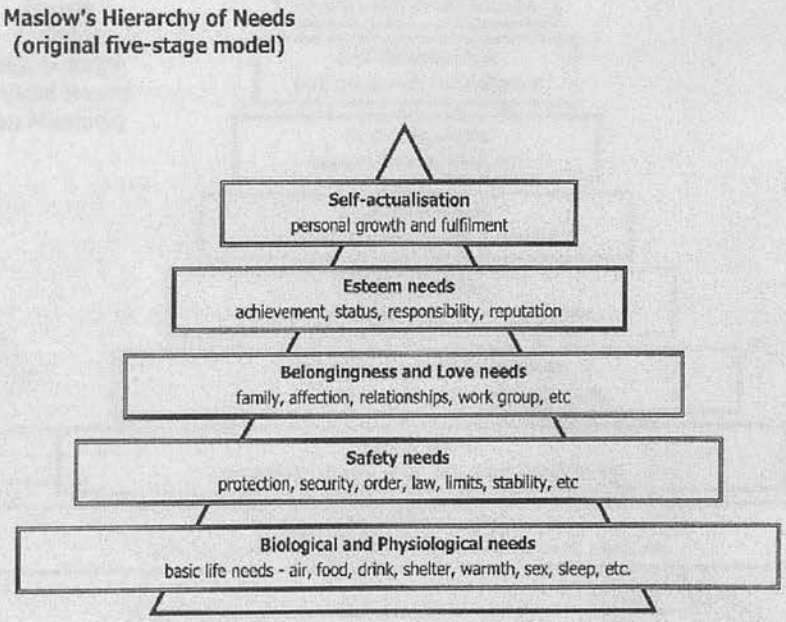
5.2.1 Maslow's hierarchy of needs

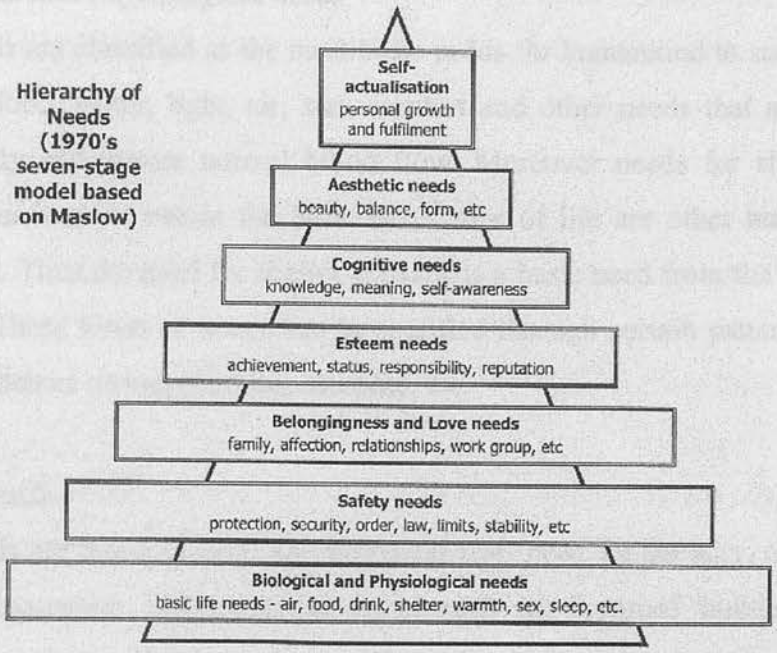
In 1954 Abraham Maslow proposed a hypothetical model of human behaviour in his book *Motivation and Personality*, which was updated by his colleagues (Maslow, 1987). His hierarchical "holistic-dynamic theory" draws on the earlier psychological work of John Dewey and Gestalt theory as well as on the psychoanalytical literature (Lang, 1994:156). He introduced a model for human motivation. He pointed out that behind any human behaviour there are motivations that work as guiding forces. Maslow suggested five sets of basic needs from the most fundamental to the most esoteric. These motivations exist in a hierarchical pyramidal order, starting from basic needs which are the physiological needs, to the top one which is self-actualisation needs. He illustrated that if the most basic needs are comparatively well gratified, it becomes unimportant in the current dynamic of the individual and the needs shift to less basic ones (Maslow, 1954:80-106).

His hierarchy of basic needs begins with physiological needs (the need for survival). These are followed by safety and security needs, affiliation needs, esteem needs, and self-actualisation needs. Maslow in the second edition of his book *Motivation and Personality*, 1970 included cognitive and aesthetic needs, which guide and shape the processes of attaining the other needs but also have a character of their own. Later in the 1990s adapted the hierarchy of needs to include transcendence needs as illustrated in (Figure: 5.1) (Chapman, 2004). Maslow's hierarchical needs were divided or classified by later investigators into lower-order needs or basic needs and higher-order needs or

growth needs. The basic needs are physiological, such as food, water, and shelter; and psychological, such as affection, security, and self esteem. These basic needs are also called deficiency needs because if they are not met by an individual, then that person will strive to make up the deficiency. The higher needs are called growth needs. These include justice, goodness, beauty, order, unity, etc. Basic needs take priority over these growth needs. People who lack food or water cannot attend to justice or beauty.

These needs are listed below in hierarchical order (see Figure: 5.1 1990 hierarchical). The needs on the bottom of the list (1 to 4) must be met before the needs above it can be met. The top four needs (5 to 8) can be pursued in any order depending on a person's wants or circumstance, as long as all the other needs (1 to 4) have all been met. The following introduced these needs that embodied in the three hierarchies:





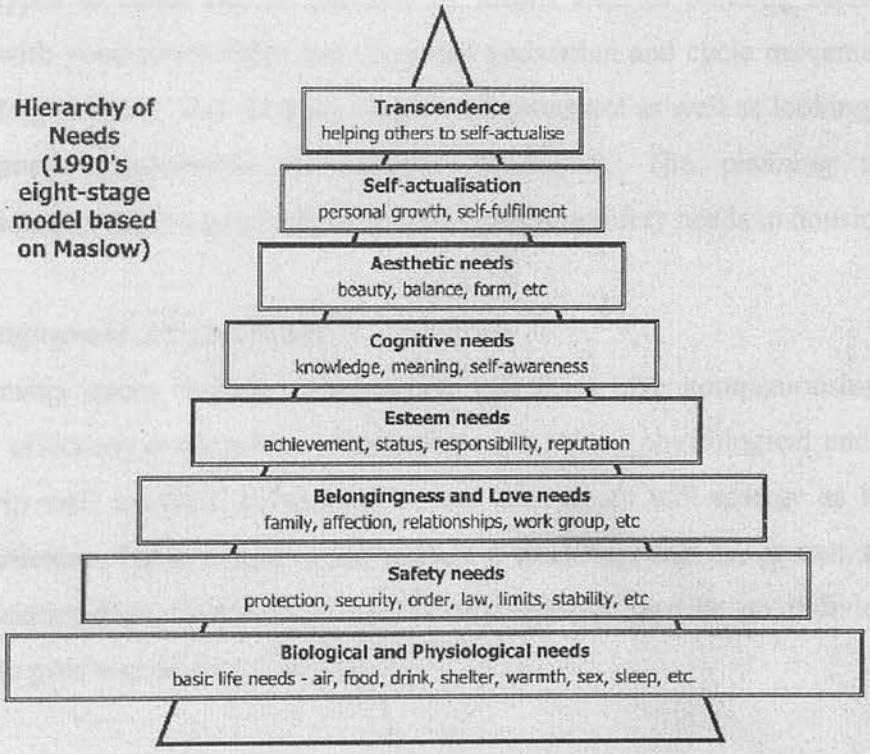


Figure: 5. 1 Development of Maslow's model of human needs 1954, 1970s, 1990s.

(Source: www.businessballs.com).

1. Biological and Physiological needs

These needs are classified as the most basic needs for humankind to survive such as the needs for food, water, light, air, sun, comfort and other needs that are related to the human body and ensure normal blood flow. Moreover needs for sleep and moving around a territory to obtain the basic necessities of life are other basic needs (Lang, 1994: 156). Thus the need for shelter appears as a basic need from the extremes of heat and cold. These kinds of needs can be gratified through certain patterns of behaviour; activities such as eating, drinking, sleeping, etc.

2. Safety needs

These needs are freedom from psychological fear, need for security, order, law, limits, stability, protection from physical harm such as fireproof buildings, earthquake, flooding damages, animal attack, etc. These would include adequate housing, reliable transportation, and anything that contributes to the orderliness and predictability of life. These types of needs can be gratified by means such as building shelter, integrated layout with good street lights and separated pedestrian and cycle movement from cars, controlling territory, and forming a legible environment as well as looking for a healthy environment (*sustainable development strategies*). The planning and building legislation can make a good contribution to fulfilling safety needs in housing.

3. Belongingness and love needs

Relationship needs include socialisation, affection, love companionship, friendship, family, affection, work group, relationships, etc. Once physiological and safety needs are fairly well satisfied, belongingness and love needs will emerge as leading in the need structure. These needs would include a desire for family, greater satisfaction in work relationships. Furthermore social structure can provide an individual with the ability to give and receive affection.

Maslow addressed these social needs and concluded that if not satisfied, the person would feel lonely, worthless and rootless (Maslow, 1987: 20). Moreover such needs can be addressed by socialisation processes and by the individual being given the right to own his own home. The idea of ownership serves to create a sense of belonging and leads to personal satisfaction and freedom (Salamati, 2001: 10). Since people are social

beings, they have a need to belong and to be accepted by various groups. When social needs become dominant, a person will strive for meaningful relations with others.

4. Esteem needs

The esteem needs are; feelings of adequacy, competence, independence, confidence, appreciation, self-esteem, achievement, mastery, status, dominance, prestige, and recognition by others. After satisfying the need to belong, individuals begin searching for higher level and this leads to feeling the need for esteem both self-esteem and recognition from others. Satisfaction of these esteem needs creates feelings of self-confidence, the desire for prestige, power and control. These will lead to people beginning to feel that they are valuable and have some effect on their environment. If the esteem needs are unsatisfied disruptive or immature behaviour may occur by individuals (Accel-Team.com, 2004).

5. Cognitive needs

These needs are contributing to knowledge, meaning, learning for learning's sake etc. some refer to them as the desire to know and understand. It could be addressed through opportunities for learning, exploration and self-testing. Learning could occur in different ways consciously or subconsciously in many places such as schools, universities, libraries, museums, internet, streets, self-testing and the surrounding environment.

6. Aesthetic needs

Aesthetic needs are the appreciation and search for beauty, balance, form, etc. The meanings of these needs differ between individuals and societies due to cultural influences as Lang (1994) illustrates that 'the definition of beautiful is very much culture-dependent and often highly individual' (Lang, 1994: 316). The sense of beauty could be appreciated through many senses such as sight, touch, smell, and hearing. The aesthetic can be natural or artificial.

7. Self-actualisation needs

They are: realising one's personal potential, self-fulfilment, seeking personal growth and peak experiences. Self-actualisation is the need to maximise one's potential,

whatever it may be. A musician must play music, a poet must write, a professor must teach. As Maslow expressed it, "what a man can be, he must be." Thus self-actualisation is the desire to become what one is capable of becoming. Individuals satisfy this need in different ways. In one person it may be expressed in the desire to be an ideal parent; in another it may be expressed in managing an organisation; in another by athleticism. The way self-actualisation is expressed can change over the life cycle. For example, a self-actualised athlete may eventually look for other areas in which to maximise potential as his or her physical attributes change over time or as his or her horizons broaden.

This area is the most difficult to define and therefore, may be the most difficult to explain. It is may lie in the fact that motivation is more internal and therefore, even more individualistic. Different people have different ideas about what they need to achieve in order to obtain true happiness. People who pursue self-actualisation are more accepting of reality, themselves, and others. Commonly, individuals aspiring to this level often operate outside existing organisations and instead build their own structures to suit their individual needs.

8. Transcendence needs

Transcendence needs are helping others to achieve self-actualisation. Moreover this level recognises the human need for ethics, creativity, compassion and spirituality. What makes the difference between humans and animals or machines is this spiritual or transgenic sense. The ultimate goal of life in Maslow's model is self-actualisation, which is almost never fully reached but rather it is something to always struggle towards. Peak experiences could be classified as temporary self-actualisations. A later hypothesis of Maslow illustrated that this level does not stop, it goes on to self-transcendence, which carries us to the spiritual level, for example, all prophets are classified as self-transcendent.

The suggestion is that the planning and building legislation goal at this level is as a tool to formulate housing policy and to help people obtain the skills and knowledge that will push them up the hierarchy permanently. People who have their basic needs met by housing become much better citizens. They are able to focus on fulfilling their dreams, instead of time after time worrying about how to make ends meet.

In discussing this theory, it appears that the further up the scale an individual moves, the more the rewards or motivators move from the external environment to an internal need. It also becomes more difficult to influence motivation, since material rewards become less relevant and internal rewards become more difficult to identify and address.

5.2.2 Motivator-hygiene model (Herzberg) 1950s

Frederick Herzberg and his associates began their research into motivation during the 1950s, extending the work of Maslow. The result of this work was the formulation of what Herzberg termed the Motivation-Hygiene Theory (Luthans, 1992:159). His work was mainly concentrated on job motivation. Herzberg developed two factors which are closely based on Maslow's Hierarchy of Needs, except they are more closely related to work: Herzberg's study goes further than Maslow, cutting the hierarchy off near the top and confirming that motivation is a consequence only from some elements of esteem needs and self-actualisation.

The important hypotheses of this theory are that:

1. Job motivators could be divided into two types, one type which results in satisfaction with the job, and the other which just avoids dissatisfaction. The two types are quite separate and distinct from one another. Herzberg called the factors which result in job satisfaction *motivators* and those that prevent, dissatisfaction *hygienes.*

2. The *hygiene* factors which prevent dissatisfaction are:

- Working conditions;
- Policies and administrative practices;
- Salary and benefits;
- Supervision;
- Status;
- Job security;
- Fellow workers; and
- Personal life.

Hygiene factors are defined as basically factors that describe the conditions of work rather than the work itself. When they are present there is no motivation but when they are absent they can result in negative feelings about the job or there is dissatisfaction.

3. The *motivator* factors that lead to job satisfaction are:

- Recognition;
- Achievement;
- Advancement;
- Growth;
- Responsibility; and
- Job challenge.

Motivators are those aspects of work related to job satisfaction but not to dissatisfaction, such as recognition of good work and granting greater feelings of freedom and the responsibility of work. In short, Motivator-Hygiene Theory was developed by Herzberg to explain the motivations of workers in the workplace. However, this model could be applied to many other contexts such as housing due to its flexibility and breadth, rather than being limited to the workplace. This theory closely mirrors Maslow's Hierarchy of Needs but diverges from him in structure. Herzberg classified needs under two much larger categories of motivator (belongingness/esteem/self-actualisation) and hygiene (physiological and safety) needs.

In the context of architecture, planning and building legislation assists in providing shelter where physiological needs, safety and social needs are gratified, that might work as hygienic factors and help to establish motivators occurring and satisfying growth needs. Hygiene factors must be present with support from building and planning legislations before motivators can be used to stimulate the user.

5.2.3 Achievement motivation model (McClelland) 1961

Psychologist David McClelland (1961) in his book *The achieving society* points out that human behaviour is controlled by three basic needs. They are:

a) Need for Achievement;

b) Need for power; and

c) Need for Affiliation.

According to McClelland (1987) every one is more strongly motivated by some needs and less strongly by other needs. Everyone has all three of these motives but simply with a different relative degree. The result of the needs is a unique mix that gives each person his/her personality.

McClelland's Theory of Needs

McClelland contends that we develop a relatively stable personality early in life that, once acquired, remains unchanged. He, therefore, does not see motivation as hierarchical. McClelland does not address the issue of growth, but has been more concerned with the behavioural consequences of need. The three areas of need he has identified include the need for *achievement*, the need for *affiliation*, and the need for *power*. Motivation has been an emphasis in behavioural research throughout the past fifty years.

Motivation has been examined extensively using several taxonomies (Maslow, 1943; McClelland, 1961; Alderfer, 1968; Barbuto & Scholl, 1998). One of the most widely used in research and practice is McClelland's tracheotomy of needs. The theory, as stated above, proposes that individuals are motivated by one of three sources: achievement, affiliation, or power (McClelland, 1961). Achievement is described as working toward something only to achieve a goal or dream. Achievement is trying to accomplish something with great effort, skill or perseverance. Affiliation is described as establishing, maintaining, or restoring a positive affective relationship with another person. This relationship is described mostly by the word "friendship." Other statements associated with affiliation are "liking," or "the desire to be liked" or "accepted by someone." Approval-seeking is a high priority of a person motivated by a need for affiliation. The need for power is described as the control or the influence of the thoughts of a person or a group of individuals (McClelland, 1970; McClelland & Burnham, 1976; Yukl, 1998).

Atkinson (1977) extended the inquiry that McClelland initiated regarding the tracheotomy of needs. McClelland and Atkinson suggested that "people behave as they do because they believe their behaviour will lead to a desired reward or goal" (Hampton, et. al, 1982). The tracheotomy of needs is based on the proposition that

people make choices about volunteering according to their goals or needs and whether the volunteering will lead to the goals (Henderson, 1981).

Achievement Need

Achievement is reproduced in stories about reaching challenging goals, setting new records, successful completion of difficult tasks, and doing something not done before.

High need success individuals prefer a job in which success depends on effort and ability rather than on chance and factors beyond their control. They favour tasks that enable them to exercise their skills and initiation in problem solving. They want frequent and specific feedback about performance so they can enjoy the experience of making progress toward objectives.

Need for achievement: Individuals in this category have a strong desire to perform challenging tasks well. They have a preference for situations where personal responsibility can be taken for successful outcomes. The goals they set provide for moderate and calculated risk, and the individual seeks performance feedback to allow for modification and to ensure success.

Power Needs

Yukl (1989) reviewed the results of McClelland's theory in predicting leadership. Power stories reflect influencing others, defeating an opponent or competitor, winning and argument, or attaining a position of greater authority. Persons with low need for power may lack the assertiveness and self-confidence necessary to organise and direct group activities effectively.

A high need for power may be expressed as "personalised power" or "socialised power." People with high personalised power may have little inhibition or self control, and they exercise power impulsively. Related to this are tendencies to be rude, excessive use of alcohol, sexual harassment, and acquiring status symbols (e.g., big offices, desks, fancy cars, etc.). When they give advice or support, it is with strategic intent to further support their own status. They demand loyalty to their leadership rather than to the organisation. When the leader leaves the organisation there is likely to be disorder and breakdown of team morale and direction.

Socialised power need is most often associated with effective leadership. These leaders direct their power in socially positive ways that benefit others and the organisation rather than only contributing to the leader's status and gain. They seek power because it is through power that tasks are accomplished. They are more hesitant to use power in a manipulative manner, are less narcissistic and defensive, accumulate fewer material possessions or symbols of power or status, have a longer range perspective, and are more willing to receive consultation and advice. They realise that power must be distributed and shared, and that everyone must have a sense of influence over their own jobs. Effective leaders empower others who use that power to enact and further the leader's vision for the organisation.

Affiliation Need

People in this category display a need to establish and maintain friendly, compatible relationships. They have a need to like other people and want others to like them. They have an ability to create social networks that will result in meeting these needs.

Affiliation subjects are revealed in stories about establishing or restoring close and friendly relationships, joining groups, participating in pleasant social activities, and enjoying shared activities with family or friends. It reflects behaviours toward others that are co-operative, supportive, and friendly and which value belonging and conformity to the group. They obtain great satisfaction from being liked and accepted by others, and prefer to work with others who prefer group harmony and cohesion (e.g., relationship).

A person low in affiliation tends to be a loner who is uncomfortable socialising with others except for a few close friends or family (shyness). They may lack motivation or energy to maintain high social contacts in networking, group presentations, public relations, and building close personal relations with peers.

Those with a strong affiliation need are reluctant to let work interfere with harmonious relationships. Moderate affiliation need is related to effective management, since strong needs often lead to avoidance of unpopular decisions, permitting exceptions to rules, and showing favouritism to friends. This often leads to subordinates feeling confused about rules, playing to the manager's likes, and

becoming anxious about what might happen next (inequity).

McClelland's theory: summary and conclusion

The most essential part of McClelland's theory is that different people have different motives and therefore, different personalities. The result of this is that one is more or less suited to different roles. Everyone has strengths and weaknesses in different situations and the tendency is that one guides oneself toward situations in which he or she can do his or her best.

Since this theory is non-hierarchical, the growth pattern between intrinsic and extrinsic rewards that are a major part of the earlier theories, do not appear to contain the same significance. McClelland contends that people will be motivated to seek out and perform well in jobs that match their needs. These needs may include any of the three categories identified above and are not contingent on any progression from one category to another.

5.2.4 ERG model (Alderfer), 1972

Alderfer (1972) in his book *Existence, Relatedness, and Growth; Human Needs in Organizational Settings* suggested a new motivation theory. This theory is an extension of the Herzberg and Maslow models. His theory was formulated as a need category model that was more in line with the existing empirical evidence. Similar to Maslow and Herzberg, he believes that there is value in categorising needs and that there is a basic difference between lower-order needs and higher-order needs.

Alderfer classified the human needs in three groups: *existence, relatedness* and *growth.* The *existence needs* are concerned with physiological well-being (survival). They are physiological, material, (non-personal) security/safety needs that meet physiological and safety levels in Maslow's model and hygiene factors in Herzberg's model. The *relatedness needs* emphasise the importance of interpersonal, social relationships with significant other people. They are relational safety needs, the need for affection and esteem (social), social and interpersonal relationships that take the affiliation (love and esteem levels) in Maslow's model and in-between hygiene and motivators in Herzberg's

model. The *growth needs* are care of the individual's intrinsic desire for personal development. They are competence, autonomy, achievement, self-esteem, self-actualisation which are equivalent to the esteem and self-actualisation levels in Maslow's model and motivators in Herzberg's model (see Figure: 5. 2). Thus the ERG model does not have exact lines of separation.

Alderfer is suggesting more of a range of needs than Maslow's hierarchical levels or two factors of Herzberg's need. Unlike Maslow and Herzberg, he does not contend that a lower-level need has to be fulfilled before a higher-level need is motivated or that dispossession is the only way to set off a need. For example, under ERG theory, the person's background or cultural environment may say that relatedness needs will take priority over unfulfilled existence needs and that the more the growth needs are satisfied, the more they will increase in strength.

Alderfer's ERG theory also states that more than one need may be influential at the same time. If the gratification of a higher-level need is frustrated, the desire to satisfy a lower-level need will increase. He identifies this phenomenon as the "frustration & shy aggression dimension."

Similarities to Maslow's Hierarchy

Studies have shown that the middle levels of Maslow's hierarchy have some overlap; Alderfer addressed this issue by reducing the number of levels to three. The ERG needs can be mapped to those of Maslow's theory as follows:

- Existence: Physiological and safety needs
- Relatedness: Social and external esteem needs
- Growth: Self-actualisation and internal esteem needs

Like Maslow's model, the ERG theory is hierarchical - existence needs have priority over relatedness needs, which have priority over growth.

Differences from Maslow's hierarchy

In addition to the reduction in the number of levels, the ERG theory differs from Maslow's in the following three ways:

Unlike Maslow's hierarchy, the ERG theory allows for different levels of needs to be pursued simultaneously.

- The ERG theory allows the order of the needs be different for different people;
- The ERG theory acknowledges that if a higher level need remains unfulfilled; then
- The person may regress to lower level needs that appear easier to satisfy.

This is known as the frustration-regression principle.

Thus, while the ERG theory presents a model of progressive needs, the hierarchical aspect is not rigid. This flexibility allows the ERG theory to account for a wider range of observed behaviours. For example, it can explain the "starving artist" who may place growth needs above existence ones.

5.2.5 A comparison and evaluation of the four models

Each theory describes the physiological, psychological and self-actualisation aspects in near identical terms. Herzberg's maintenance factors mirror Maslow's physiological, security and belongingness needs and Alderfer's existence and relatedness needs. Maslow's esteem and self-actualisation needs are similar to Herzberg's motivator traits and Alderfer's growth requirement. It should be clear that the similarities vastly outweigh the differences. It should also be clear that Maslow's Hierarchy of Needs theory was a remarkable piece of social science, and very influential to future scholars.

The testing of these four theories has resulted in some conclusions that help us identify the strengths and limitations of each approach. While Maslow's theory is complicated and contains more steps than the others, there is a recognition of the progression from one level to the other. Alderfer's three levels seem to be simpler, less rigid, and therefore, may be more satisfactory to those who wish to understand and apply a model to individual behaviour. The results of McClelland's research have been applied in organisational settings and have been supportive of the idea that particular needs are motivational. The application of any theory of motivation has strengths and weaknesses that allow insight into individual motivation and provide escape for those times when the theory will let us down. All theories contribute to a better understanding of human

behaviour in general, but specific application of theory depends on factors that respond to individual needs.

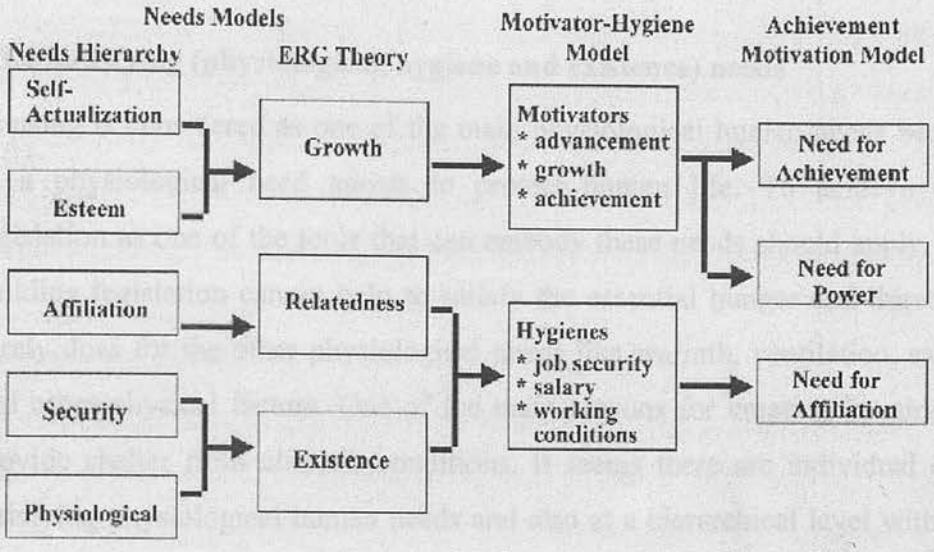


Figure: 5. 2 Flowchart. Comparing of the four different models.

After the four theories have been introduced and explored. The author suggests that human needs could be divided in two main types of needs that are *fixed* (essential) and *changeable* or *non-fixed* (spiritual). The *fixed* is a level where all individuals with different: ages, physical and mental abilities, values, beliefs, and customs that differ from country to country and group to group, share the same requirements, feelings and desire for similar needs. These needs are food, water, air and shelter and do not change with a change of circumstances. This level is concerned with maintaining the human body, which corresponds to the lower-order in Maslow's model. The second level aims to maintain the growth of spiritual needs. These needs are social respect, esteem, freedom and self-actualisation. Unlike the fixed-level needs, at this level, individuals differ in degrees of satisfaction of having their needs met and only a few people feel all their needs are satisfied at this level.

5.3 Satisfying human needs in planning and building legislation

In this section the author attempts to translate the human needs that have been identified in the four models to planning and building legislation. Attempts to meet these needs in

housing as Lang (1994) has suggested and the translation of human needs to urban design are few as his book, *Urban Design the American Experience* has shown.

5.3.1 Satisfying (physiological, hygiene and existence) needs

Housing is considered as one of the main physiological human needs because housing as a physiological need assists to protect human life. To achieve that, detailed legislation as one of the tools that can embody these needs should apply. Planning and building legislation cannot help to satisfy the essential hunger and thirst needs, but it surely does for the other physiological needs like warmth, ventilation, sanitation, light and other physical factors. One of the main reasons for creating housing has been to provide shelter from climatic conditions. It seems there are individual differences in satisfying physiological human needs and also at a hierarchical level within each need, for example, to satisfy hunger one need only have bread and water; others may have many kinds of food, like meat, vegetables, soups and fruits. The variety and quality of foods stuffs depend on socio-economic status and ways of living. Furthermore, people differ in their abilities which are reflected in their physical needs and how they are gratified, for instance, elderly, blind and handicapped people find stairs inside houses or outside an obstacle and there is a need for good detailed legislation to support their accessibility needs. The basic needs might differ from generation to generation and from country to country where the technological infrastructure may play an important qualitative role in the need, for example, electricity, television and the internet in western and most developing countries becoming a part of their basic needs.

Lang (1994) divided the physiological needs into four categories: *survival*, *health*, *comfort* and *physiological development*. These categories have design implications in the built environment (Lang, 1994: 217-222). In the following, these categories are explained in more detail:

Survival

Survival is the most basic of human needs and if unsatisfied, human life becomes difficult or impossible. These needs are for food, air, water and shelter. Building and planning legislation can help by specific codes to provide housing that gives access to food, energy and clean water. Moreover, to have a minimum infrastructure system and

to embody sustainable development in legislation codes. Safety needs are concurrent with survival needs. The legislation should have codes that stress having buildings that are sound enough to survive natural calamity such as earthquakes, flood and hurricanes. Much old legislation dealt with this need and embodied punishment codes to safeguard the inhabitants and passers-by from the buildings and building developments (see Chapter Four). The legislation codes need to allow for road networks providing safety for children, cycling, all pedestrians and drivers by clear separation between different speeds and directions and having speed limits particularly in residential areas.

Health and comfort

Health and comfort issues are met in housing through legislation that leads to having good environmental design, public sanitation and a healthy place. Salamati, (2001) points out that "Comfort is a complex variable because while primarily a physiological state it also has strong psychological characteristics" (Salamati, 2001:79). Moreover comfort is connected to "freedom from pain on all dimensions of environmental experience" (Lang, 1994: 221), for example, having appropriate domestic temperatures that are responsive to climatic conditions and enough oxygen for the body or reducing over crowding. This last need can be met, for example, by designing corridors and living rooms wide enough to avoid congestion. Most building and planning legislation has been based on health issues particularly the legislation that emerged after the industrial revolution to overcome overcrowding and unhealthy conditions (see Chapter Four for more details). Legislative codes providing sewerage systems, clean water, a decrease in domestic overcrowding by having enough spaces for family members and the prevention of swamps being formed by poor drainage by having good rain water systems and paved streets have all helped to create a healthier environment.

To create a healthy and comfortable built environment, Libyan legislation should embody the following issues:

- Dwellings should have clean air by cross ventilation and enough width for corridors and all living spaces;
- A healthy environment should be provided by protecting the dwellings and streets from dusty winds, swamps and pollution;
- Shaded areas in streets should be established to protect passers-by from the sun and heat, particularly in summer;

- Having a compact urban fabric to reduce heat gain. Consequently reducing energy uses for cooling thus having less pollution; and
- Open spaces should be of a suitable size by studying building setbacks and site coverage regulations that suit the local environment and not adopted from European regulations for site coverage and building setbacks that are more relevant to European climate where the sunlight is welcomed.

Physiological development needs

This need is extremely important for everybody and is more important for growing children. People should be provided with opportunities to exercise their bodies and to increase their physiological competence through the self-testing of their abilities as well as enhancing opportunities for creative play inside and outside dwellings (Lang, 1994: 220 & Salamati, 2001:79). This could be achieved in housing by providing enough playgrounds, playing fields and sporting facilities that would be available for different ages and gender.

5.3.2 Satisfying (safety, hygiene and existence) needs

Safety is a key need for survival as Maslow, Herzberg and Alderfer's theories show. Humans seek to have this in life since if it is lacking, man cannot make any progress in all his actions. Analysing safety and security leads to knowing how they could be satisfied by building and planning legislation. Ahmed Suliman (1996) wrote that there are four dimensions which play an important role in satisfying safety and security in housing, these are: physiological, economical, legislative and social dimensions (Suliman, 1996: 36).

Lang (1994) categorised safety and security needs as: physiological and psychological. The physiological safety needs involve freedom from physical harm such as harmful bacteria, pollutants, natural disasters, behaviour patterns, materials, machines and various types of accidents. The psychological safety needs as Lang points out are having a sense of place, both geographically and socially in a society (Lang, 1994: 234). This could be achieved through acceptance of levels of privacy, awareness of the issue of territoriality and attaining a sense of place and legibility. The following explain the two categories in more depth.

Physical safety needs

a) *Harmful bacteria and pollutants*

The built environment which has harmful bacteria and pollutants can be one reason that frustrates the satisfaction of safety needs. To maintain residents' living standards, the location of harmful facilities must be dealt with and the provision of good sanitation is necessary in housing. The way to achieve these could be by more detailed codes of planning and building that would help to create a sustainable environment with a minimum amount of pollution and ecological damage. Harmful bacteria have many sources, such as poor waste disposal, stagnant water, bites from insects, etc. Some of the housing projects in Tripoli such as *Hay 2 March* and *Kelat Jumma* (*Enjela*) have the potential to have harmful bacteria. The lack of a sewage system in *Kelat Jumma* (*Enjela*) project, poor waste disposal and stagnant water in the *Hay 2 March* project due to non-paved inner streets and huge empty public spaces with waste and rubbish where dumping is uncontrolled, these are the main sources of a noxious environment (see Chapter Eight). Providing a good infrastructure in housing plays an important role in people's health protection.

Pollution from industry and the automobile has a harmful effect on health. The earliest building and planning codes evolved with health care to provide physiological safety because legislators perceived the importance of safety needs for people in the built environment (see Chapter Four).

b) *Natural disasters*

Safety codes and regulations play a major role in formulating physically powerful housing that protects users from natural disasters such as fire, earthquake, flood and storms. These codes and regulations should be developed and continually updated according to the latest empirical data and the best built technology available to minimise the effects of disasters.

c) *Accidents from materials and machines*

Behavioural patterns cause many accidents inside and outside houses, exacerbated by materials and machines such as slippery surfaces, vehicular, electricity and children

falling down from upper floors. All of these factors minimise physical safety needs. Planning and building regulations should embody codes that prevent accidents and increase personal safety by the implementation of these codes. Such accident prevention could be achieved by:

- Segregating vehicular traffic to different speeds of movement (cycle, cars and pedestrian) within neighbourhoods.
- The road width and speed should be arranged in a hierarchical form within residential areas particularly for children, people with disabilities and old people's safety.
- Good materials for floors and pathways should be used that are slip-resistant in wet conditions and guard rails should be erected around danger areas such as stairs and ponds to provide safety for different users.
- Electricity causes many accidents and undermines safety if it is not designed with good materials and to high specifications.
- Buildings should be structurally sound to prevent the collapse of floors, roofs and other elements.
- Thieves and other intruders should be kept away by planning and design solutions that increase natural surveillance, street lighting and the integration of streets.
- Increased social interaction inside and outside buildings could be encouraged, leading to people feeling safer. Empty streets may cause people to feel unsafe (see Chapter Seven for more details). Mixed-use streets where different functions, different ages and people on varied incomes would help to increase safety and security. Moreover, an increased ethnic awareness should be encouraged between people such as in Muslim cities and mosques play an important role in achieving that.

Psychological safety needs

Psychological security and safety needs are having a sense of place, equally geographically and socially in a society (Lang, 1994: 238). Moreover, having control over one's life with peace of mind. To have control over one's activities and the access other people have to them, provides a sense of security and control. The main mechanisms for attaining control are privacy, territoriality, prevention of crowding,

forming a legible environment and creating a place which has a special character that is different from other places to achieve an emotional tie to that place. The following reviews these mechanisms:

Privacy

Psychological safety can be attained by having control over one's life which is achieved by privacy. Privacy is the ability to control interaction. Privacy is expressed and formed differently across cultures and throughout history. However it has the same nature concept and reality. Rapoport (1977) points out that attaining privacy has two processes; 1) the control of the flow of information about a behaviour given to, or obtained by, people outside the setting, 2) excluding the intrusion of unwanted information into a setting (Rapoport, 1977: 203). Fundamentally in the built environment, privacy is the ability to have control over the flow of information to and from the immediate environment whenever and wherever necessary. Privacy plays an important role in users' satisfaction of the built environment. Anything restricting the ability to control desired privacy is reflected in the dissatisfaction of the users. Privacy has different levels such as personal privacy, intra-family privacy, family privacy, neighbourhood privacy and urban privacy (Salamati, 2001: 83). Planning and building legislation in Libya should have codes that respect the concept of privacy and reflect them at settlement design of spaces and urban areas such as streets, public spaces and markets. The esteem of visual privacy among Muslims, in both indoor and outdoor living space, is of greatest concern (Saleh, 1997:167). Clear hierarchical distinctive spaces varying from public to semi-public to semi-private and private could work well to achieve privacy at both levels inside and outside settlements. Moreover, by controling the distances between blocks, direction and size of windows and construction technology, that would help to achieve audio-privacy.

Prevention of crowding

Crowding is a phenomenon that is to do with the perception of there being too many people around (Salamati, 2001: 83). It is influenced by the feeing of psychological safety needs and practically, by the need for privacy. Crowding is related to a personal experience and a feeling as well as differing from culture to culture. Crowding within a home occurs when there are too few living spaces that can accommodate all family

members. It is a relationship between people and the amount of space they occupy. Regulations in western countries deal with crowding from a public heath perspective, for example, maximum occupancy of dwellings in Britain was set at two persons per room considering the oxygen used up by an individual and the measured rate of air exchange in a room of normal size (Chowdhury, 1985). However, in Libya according to Islamic teaching, indoor spaces should have at list two bedrooms for children, one for boys and the other for girls and a guest room for male guests separated from family living areas. This situation might contribute to minimising overcrowding.

Territoriality

Territoriality is defined as a pattern of behaviour related to the ownership or occupation of a place or geographic area by an individual or a group and involves personalisation and protection against intrusion (Holahan, 1982: 256). It is a part of psychological safety needs. Privacy can be a result of achieving territories. Characteristics that define territoriality are *bounded*, *personalised* and *defended.* Boundaries contain physical and symbolic types such as walls and fences which are physical forms; medieval cities surrounded by city walls are a good example of it or change in the surface materials, which are the symbolic form. People desire to personalise their spaces as a kind of individual expression by different forms such as decorating surfaces using symbols, exhibiting space using personal possessions, etc. This situation is very clear in housing projects in Tripoli where many users try to change their typical flats in different ways to show their personality and their dominance of the space (see Chapters Eight and Nine for more details). Defending territories take different levels of actions such as antagonism, being wary of strangers and keeping an eye on the street. People's need for their housing is influenced by their distinguishing their own territories. Planning and building legislation can contribute to achieve territoriality by subdivision codes that can help to identify a neighbourhood. Traditional Islamic cities are a good source to learn from this approach, where districts are defined by main provisions such as mosques, public baths and schools which gives a physically powerful sense of belonging.

Sense of place

Sense of place has two aspects; social and geographical. Psychological safety needs can be achieved through a sense of place in its physical form. Being connected with a place increases the satisfaction of relationship needs; it also improves a sense of territorial

control and leads to fulfilment of psychological safety and security needs. To achieve that, places should be physically different from each other. The planning codes should help the design of place to embody unique qualities instead of being a standard type. In Libyan public housing schemes as in the case studies (see Chapter Nine) the need to satisfy a sense of place is very clear where most of the flats faced many changes, particularly in elevations due to inhabitants' need to create a sense of place, besides other reasons (see Chapter Nine). Due to that, each block should have unique elements to create a sense of place and its own identity rather than them all being the same.

Legibility

Legibility or way finding or orientation could be defined as how both visitors and residents find their way around. Legibility is a way which helps people to satisfy their psychological safety. Lang (1994) points out that "it is important for people to know where they are geographically, to be able to develop an image of the overall environmental layout and its opportunities in their minds" (Lang, 1994: 240). People can be prevented from getting lost by having a legible and imaginable physical environment, consequently forming cognitive maps in their mind in order to find their way. According to Kevin Lynch (1960), the concept of legibility could be justified by cognitive maps. Lynch found out that there are five elements that help people to formulate cognitive maps in their minds. These elements are paths, edges, districts, nodes and landmarks. Thus to obtain legibility in the physical environment in Libya, the planning and building legislation should make a significant contribution through codes that deal with legibility such as signs, graphics, colours, lights, furniture, etc. These are important for both visitors and residents to find their way easily around streets, buildings, flats and private houses at neighbourhood level and at city level.

5.3.3 Satisfying (belongingness and love, hygiene, affiliation, relatedness) needs

The four models are met and have the same concept at this need. Belongingness and love needs are classified as basic needs in Maslow's model. After basic physiological, safety and security needs are met, affiliation needs become predominant and if not fulfilled, the person would feel lonely, worthless (Maslow, 1987: 20).

Affiliation subject matters are shown in stories about creating close and friendly

relationships, joining groups, participating in pleasant social activities, and enjoying shared activities with family or friends. It reflects interpersonal behaviours that are friendly, co-operative and supportive and which value belonging and conformity to the group. Individuals obtain the greatest satisfaction from being liked and accepted by others, and prefer to work with others who like to work harmoniously and cohesively. The need for belonging could be fulfilled by having helpful relationships and an identity as a contributing member of a number of groups that might be biological or sociological such as a being a member of a kinship system or a set of organisations.

There are other things that contribute to having a good sense of belonging and which improve people's abilities to fulfil their needs for affiliation where the author observes that planning and building legislation could play an important role in that contribution, for instance, belonging to a place, social networks, activities and events.

Belonging to a place

Belonging to a place becomes a strong need for people seeking belongingness and love after they have gratified their basic needs (survival). People require belonging to a place to fulfil their needs for security as well as affiliation. Having a strong association with a specific geographical area such as a neighbourhood, a city, a country, etc. is one aspect of fulfilling the need for security as well as affiliation (Salamati, 2001: 89).

Belonging to a place could be achieved in housing through having places that invite people to socialise that bind people together such as markets, schools, sport clubs, multipurpose halls and play areas in mixed land uses that have good landscape and shaded places in hot climate countries and give a clear symbol of identity. The significance of landscape and location play important roles in giving an identity to a place and lead to a feeling of belonging to a place as Lang (1994) states, "open/green spaces give a place an identity. They can be designed to be well loved and well used if well located. People will use well-located safe places that provide them proper levels of privacy and interest" (Lang, 1994: 261). Hillier also reached the same conclusion that people use integrated safe places more than segregated areas in his studies (see Chapter Seven for more detail).

The new public housing in Tripoli has failed to give a clear continuity of traditional socio-cultural and physical symbols of identity due to adopting prototypical design, poor local facilities, new constriction material and neighbourhood layouts. As a result, the need for affiliation has increased between inhabitancies (see Chapters Eight and Nine).

Social networks

A person needs to have contact to a family and a kinship system to feel that this desire can fulfil his need for belongingness and love. Lang (1994) points out that "In order to meet the need for affiliation a person can be a member of a kinship system, a set of organisation, a people and often a nation"(Lang, 1994: 253). The kinship system is clearly reflected in the physical layout of settlements and houses such as in traditional Libyan cities where it is clearly to be found in extended families and close relatives all living in one large house as well as most neighbours are from the same tribe. In Libya it is very common for a person to have a strong tie with his tribe and his extended family, particularly this is evident at social events such as celebrations and at times of sadness by having his residence near to his relatives, that enhance a person's prestige in the society and fulfils the need for belonging (see Chapter Eight). Membership of a kinship system leads to the flow of a set of obligations to other people and control of behaviour. This is clearly found in traditional Muslim neighbourhoods (Libya included) where the elderly men have the right to direct and control the behaviour of children within the streets and have the ability to solve many social problems. This is as an application of Islamic teaching.

The spatial configuration of traditional neighbourhoods and settlements in Libya that have compact shapes with unique hierarchical external spaces, has helped to increase social interaction and bind people together, thus gratifying the need for good affiliation.

Activities and events

Activities and events are very important to people as a tool to fulfil the need for belonging. These events and activities can bring people together in internal and external spaces thus establishing a sense of temporary group identity. All societies have events but vary in nature in different cultures. These events can happen frequently or be unique

(Lang, 1994: 261). The events could be sports, seasonal celebrations or deep rooted religious ceremonies. It is important to acknowledge the importance of such events in people's lives. The spatial configuration of dwellings, neighbourhoods and settlements should have suitable places to accommodate such events and activities.

In Libya there are several social, traditional and religious festivals and celebrations. The main events are weddings, child birth, *Haj* (Pilgrimage), death and religious feasts. These events happen in different places. Weddings usually take place inside the families, dwellings of both the groom and bride, neighbours' dwellings and the open spaces close to the wedding place are also used. Relatives and guests from other cities and towns, some of them with their families are fully accommodated for a minimum of three days. Child birth takes place inside family dwellings where relatives, neighbours and friends, mainly women, come to celebrate and food is served at this event. *Haj* (Pilgrimage) is happen when usually a person or a couple go on a holy visit to Mecca. Relatives and friends are invited to celebrate inside and outside the family's house. On the return, friends, relatives, neighbours and most people from close neighbourhoods gather to give thanks. This event is usually celebrated for several days and takes place inside the family's house for women and for men in tents or in a large hall if it is available, near to the family house. In death, people come to offer condolences during the first three days. This event takes place in the family's house for the women and usually in the mosque hall or tents for men. Food is prepared only by neighbours. Religious feasts mainly take place inside mosques where people gather and celebrate but some of them occur in dwellings such as *Aid El-Fetr*, that comes after *Ramadan* and *Aid El-Adha*, that comes after *Haj*.

5.3.4 Satisfying (esteem, growth, motivators, achievement and power) needs

Self-esteem is a need that has to be addressed by everybody. There are two categories of esteem need; a) the need to hold oneself in high esteem, b) the need to be respected by others. Lang (1994) states "An ideal society would be one where all people have a high degree of self-esteem without achieving it at the expense of others" (Lang, 1994: 280).

The esteem need is achieved by different people on different scales as Maslow (1987) points out: "not everybody strives for prestige to the same degree; some people have a high need for achievement and others not" (Maslow, 1987).

There is a strong connection between esteem needs and one's self-esteem which leads to being proud of oneself. Interaction between people is important to get feedback from others which enhances and shapes a person's esteem. Places where people live can give a good feeling of pride and lead to satisfying esteem needs. The image of the place, its dignity and reputation can contribute positively if it has been maintained properly. Usually people are judged by the place they live in. Building types, land uses and quality of the design of public spaces gives a neighbourhood or a precinct its status (Lang, 1994: 285).

To fulfil the esteem needs Lang (1994) presents three important areas which should be taken into account:

- Provision of learning opportunities for one's personal development such as libraries, museums, workshops, etc.;
- Opportunities to display the skills (stages for performance, communal spaces); and
- Display of the symbols of success to oneself and others (Lang, 1994: 282).

Esteem needs can be met in one important way, which is by the displaying of skills. People are evaluated by displaying their skills in different ways. For some people, evaluation of the public display of their skills is a basic way of achieving esteem needs, for others, a sufficient way is having the opportunities to display their own skills to themselves. Opportunity to display skills is offered in all social and physical environments but at dissimilar levels, for example, a rich environment is where many opportunities, both formal and informal occur. Formal settings include places such as classrooms, offices, athletic fields and theatres. On the other hand, informal settings are those not specifically designed for performance but which may involve them as kitchens, parks and playgrounds. A variety of opportunities should be provided in the everyday world so that individuals have a chance to display their own abilities (Lang, 1994: 283).

It is very important for designers to recognise the importance of people being able to shape their environments to meet their own activity and aesthetic needs in building their self-esteem. People usually like personalising their houses particularly if the legislation and design allow them to do so. This is achievable in private houses were owners have the ability to participate in design process. However, in public housing in Libya, inhabitants are forced to live in flats which typically offer no choice to make changes in design due to their construction system, (prefabrication), which reduces the opportunity to satisfy self-esteem (as will be illustrated in Chapters Eight and Nine). Moreover, Lang (1994) points out that "*If people are forced to live in environments because they have no choice, they will have a relatively low self esteem (in that respect) and will be unlikely to evaluate those environments highly, however good they may objectively be seen to be*" (Lang, 1994:289). Self-esteem needs when satisfied, lead to feelings of self-confidence, worth, strength, capability and adequacy of one's being useful and necessary in the society.

5.3.5 Satisfying (cognitive, growth, motivators, achievement and power) needs

Cognitive needs as Maslow defined them are the need to know and understand that apply to all stages of the human life cycle, but they are perhaps most critical for children between five and twelve as Lang argued (Lang, 1994: 304). Cognitive needs can occur in both formal and informal learning environments. The formal learning occurs in places such as schools, universities, etc. and under supervised opportunities for practising skills. The informal learning or semi-formal learning is concerned with getting knowledge from one's everyday experiences that come as a result of talking with others, watching television, exploring the world, participatory landscapes etc. places such as libraries and museums can provide semi-formal learning but the informal learning may take place anywhere.

Public high-rise housing in Tripoli Libya as in *Hay Alakwakh* (case study 1) where many blocks are eight and twelve storeys, with wide streets designed for cars, children are restricted and cannot play outside since they would not be safe and the layout design of the flats does not support their cognitive needs which will discussed in more detail in Chapter Eight.

Planning and building legislation can contribute to learning opportunities by having codes that help to provide places within walking distance in every neighbourhood such as schools, playgrounds, internet cafes, public libraries and places where people gather to exchange experiences, explore and test their abilities. Specific places for children such as outdoor playgrounds should be provided within the locality. These places should be easily accessible and offer flexibility to move freely and safely and under adults' supervision to control their behaviour. All of these issues can be clearly enhanced by planning and building legislation. An age mix within a variety of housing types could offer good opportunity to fulfil cognitive needs through the physical environment and social aspects.

5.3.6 Satisfying (aesthetic, growth, motivators, achievement and power) needs

Aesthetic needs are mainly concerned with beauty, which is a very broad topic, differs culturally and is based on individual taste. Aesthetic needs are amongst the most influential components of personality development. It is mainly related to building design, nature, gardens, open spaces, decoration and building materials. People also connect aesthetic needs to low levels of overcrowding, spaciousness, and bright colours. Some activities such as art and music, contribute to fulfilling this need. Psychological comfort can be seen as a result of satisfying these needs (El-Fiki, 2003: 343). The aesthetic can be natural or artificial. Aesthetic pleasure can be sensory, formal or symbolic (Lang, 1994: 318). The sensory aesthetics experience is related to perception and senses. Perceiving aesthetic pleasure through sight, hearing, smell and touch can enrich the experiences in the environment by using these senses in various ways. But sight could be the most important one where the aesthetic quality of the environment can be evaluated through it. Sight plays an important role in reviewing the aesthetic quality of the environment such as the impact of colours one observes depending on how, where and when they are perceived. On the other hand, touch is a tool for experiencing space by using the hands and feet, for example, textures of walls, floor materials and paths can be rough, smooth, soft or hard. Sounds and smells are connected to specific places such as markets, playgrounds, coffee shops, restaurants, seashore etc. and give specific identities to such places. Activities that occur in spaces, as well as materials, height and shapes are sources of producing various sounds as sharp or faint or echoing.

Formal aesthetics is concerned with the pleasure derived from the geometry of the environment. The environment consists of several geometric patterns. Formal aesthetics can be achieved by geometry, patterns and lines in space and their association to each other with their composition. The composition can be analysed in terms of its proportions, rhythms, balance points and expressions. It is usually done by a designer who inflicts a pattern, geometry, on the layout of the environment to give some order to it or as an act of personal expression (Lang, 1994: 322). The order can be simple, such as bilateral symmetry or complex, such as helical and spiral forms. Libyan traditional housing orders are simple in their outside elevations, however, they are very rich and full of decoration in their inside spaces, such as courtyards and sitting rooms.

Figure: 5. 3 Arabic courtyard houses' interiors are rich and full of decoration. (source: **www.google/libya/images**).

Gratifying aesthetic needs can be related to affiliation and esteem needs as Lang states "*if urban designers can design environments that meet people's expectations in terms of their affiliation and esteem needs, their aesthetic needs are likely to be fulfilled as well*" (Lang, 1994: 333).

Thus planning and building legislation may contribute to satisfying aesthetic needs by having codes that help inhabitants to offer a chance to influence the appearance of their own dwellings. Having unity in a housing environment by maintaining the sense of place as well as diversity by providing a varying mix of housing typology can be

another way that gives the whole place a special character that can be remembered and provide aesthetic satisfaction.

5.3.7 Satisfying (self-actualisation, growth, motivators, achievement and power) needs

Maslow defined self-actualisation need as what humans can be, they must be. Self-actualised people have the ability to turn frustrating situations to their own advantage. They are able to make themselves at home in almost any place, but they will still seek places that fulfil their individual needs for beauty or knowledge and they try to contribute to improve the community (Lang, 1994: 299-300).

Self-actualisation is "the desire to become more and more what one is, to become everything that one is capable of becoming." People who have everything can maximise their potential. They can seek knowledge, peace, aesthetic experiences, self-fulfilment, oneness with God, etc.(Mullins, 1989: 304). This need is never fully satisfied due to continued new opportunities emerging as one grows psychologically. This need, according to Maslow, is only reached by only a small percentage of the population.

Lang (1994) points out that "*in many ways the fulfilment of this need has little to do with the layout of settlements, but much to do with the social organisation of society and the interrelationships among people... but if it affords all the other human needs it will fulfil self-actualisation need too* (Lang, 1994: 212).

Self-actualisation might be achieved in dwellings and neighbourhoods by employing planning and building legislation which helps the designers to offer spaces for learning opportunities as well as which are rich in the provisions for cognitive and aesthetic needs at neighbourhoods and dwellings' levels.

Motivation need levels	General factors	Possible Planning and building legislation factors
Physiological needs	These are the very basic needs such as food, water, light, air, sun, sleep, etc. When these are not satisfied a person may feel	Codes help to have a **shelter** with suitable services and facilities (physiological needs) like warmth, ventilation, sanitation, light and

	sickness, irritation, pain, and discomfort.	other physical factors.
Safety needs	These are freedom from psychological fear, security, order, law, limits, stability, fireproof building, earthquake, flooding damages, animal attack, etc.	Codes that help to provide **privacy, legible environment, controlling territory, stable structure** and **health environment** (less pollution). Prevent natural disasters such as fire, earthquake, flood and storms
Belongingness needs	Such as socialization, affection, love companionship, friendship, family, affection, work group, relationships, etc.	Codes that help to provide a clear **identity** at the level of neighbourhood and dwelling, having places for **socialisation** and **communication** with other groups and mixed land use.
Esteem needs	These are feelings of adequacy, competence, independence, confidence, appreciation, self-esteem, achievement, mastery, status, dominance, prestige, and recognition by others.	Codes that achieve **prestige, status, dignity** (good image) and **social mix** to avoid stigmatisation at dwelling, neighbourhood and city level.
Cognitive needs	These are contributing to knowledge, meaning, learning for learning alone etc. some call them the desire to know and understand.	Codes that help to **improve one's knowledge** such as providing places those help to improve knowledge.
Aesthetic needs	Appreciation and search for beauty, balance, form, etc.	Codes that help to have a **beautiful environment**, to please the eyes and inspire the spirit. Good quality environmental design, human scale, colours, etc.
Self-actualisation needs	Realising personal potential, self-fulfilment, seeking personal growth and peak experiences.	Codes that allow for one's involvement in **shaping one's own environment.**

Table: 5. 1 Translation of human needs into planning and building legislation. (Source: the author).

5.4 Conclusion

This chapter explores the concept and function of motivation theories of human needs. It viewed and compared four main theories of human needs, these are: Maslow's model, motivator-hygiene model, achievement motivation model and ERG model. The aim is to identify through these theories all valuable aspects that need to be addressed and which could be expected to make a good contribution to the legislation. These theories

presented the importance of human needs as motivations behind any behaviour. Moreover, behaviour is both directed to, and results from, unsatisfied needs. Human needs are an important part of human nature. Values, beliefs, and customs differ from country to country and group to group. Abraham Maslow proposes that all humans have universal needs.

Human needs have a huge influence on controlling and directing human behaviour. These needs could be related to the space within housing. The life of an individual and family is clarified in the space within the home and urban areas. The study suggested that to formulate good spaces, human needs should be recognised to satisfy these needs.

After analysing and understanding human needs and given that people's needs must consider including their requirements and their culture, these theories give a good understanding of human needs and the available information to build legislation. The chapter illustrates and suggests how human needs could be satisfied through planning and building legislation. The study proposed that planning and building legislation which embodied all human needs will help to create an inhabitable environment. In addition to that, other important issues should be addressed in planning and building legislation such as sustainable development which is expected to add a new perspective to dealing with housing problems, which will be the subject matter of the next chapter.

Chapter six

Sustainable Development

Chapter Six

Sustainable development

6.1 Introduction

It emerged in Part One that housing requires a comprehensive approach which embodies several human aspects and that current Libyan planning and building legislation does not as yet include all these aspects which deal with that approach, such as the importance of perceiving the natural environment, having a suitable infrastructure and giving consideration to the socio-cultural attributes that can improve the quality and way of life of Libyan society. These are the major reasons for applying a sustainable development concept to housing legislation.

Housing by nature is a complex phenomenon. It consumes natural resources, constitutes a major economic activity and embodies socio-cultural attributes. These components have a direct impact on the natural environment and general economy, as well as the quality and way of life of people in their settlements (Chiu, 2004:1).

This chapter uses the concept of sustainable development to offer a holistic perspective to study the above aspects that will lead, as the research methodology stated earlier, to establishing a body of knowledge from which legislators could benefit when producing comprehensive housing legislation.

The chapter discusses and provides an overview of sustainable development as an important approach which deals with the natural environment generally, and the built environment in particular, to improve people's quality of life. In the last decade, post Rio 1992 sustainable development has become a core goal for many governments after the negative impact of man's activities upon the natural environment (pollution, global warming, loss of agricultural land etc.).The chapter emphasises that there are three

dimensions to sustainable building: ecological, economic and socio-cultural (Kua and Lee. 2002: 231-240).

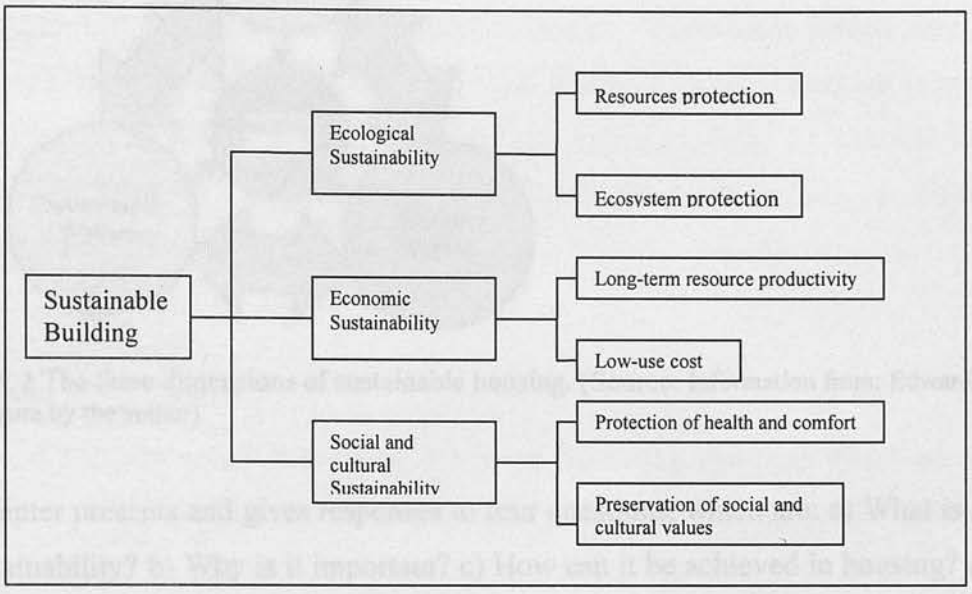


Figure: 6. 1 The three dimensions of sustainable building. (Source: Kohler, N. quoted in Kua and Lee. 2002: 233).

The author's recognition of the three dimensions, has led to his looking at a number of key issues, such as: resource protection (ecological sustainability), long-term resource productivity and low-use cost (economic sustainability) and cultural preservation in the form of built heritage conservation (social/cultural sustainability) (ibid: 233). These, he argues, could help to improve an understanding of the context of building and planning legislation. Therefore, the chapter describes and assesses the three dimensions of sustainable development in housing and outlines some definitions of its purposes and its significance. The chapter also aims to establish guidelines for sustainable development applicable to housing in Libya generally, and to Tripoli in particular, as a way to improve the quality of life in contemporary housing and fill in the gap in building and planning legislation.

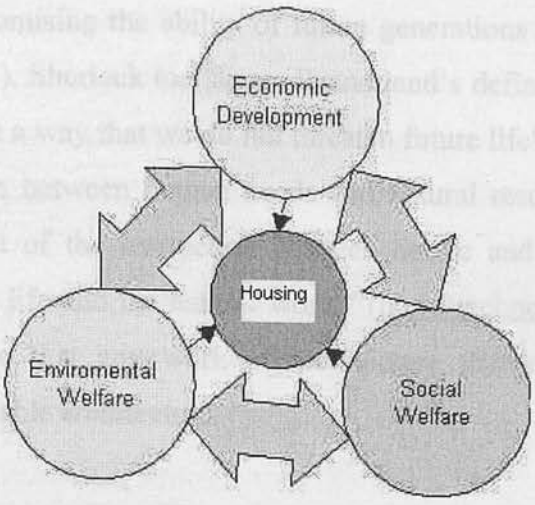


Figure: 6. 2 The three dimensions of sustainable housing. (Source: Information from: Edwards, 2000; figure by the author).

The chapter presents and gives responses to four questions, which are: a) What is meant by sustainability? b) Why is it important? c) How can it be achieved in housing? and d) What guidelines can be deduced from the concept of sustainable development for housing? From these investigations, the study intends to propose a primary foundation to developing building legislation in Libya.

6.2 Definitions of sustainable development

Many researchers have tried to define sustainable development. This section presents some of these definitions to examine their understanding of the issue of sustainability. These show the dimensions and limitations of it, which will give a framework for this study of planning and building legislation in Libya.

6.2.1 Sustainable development

Sustainable development is an approach that deals with the relationships between human and natural systems and considers the long term. Sustainable development should include all kinds of activities and processes that increase the capacity of people or the environment to meet human needs and improve the quality of human life. It should include all physical and non-physical activities in balance and meet present needs as well as ensuring future generations' needs. Brundtland defines sustainable development as: "...development that meets the needs of the present without

compromising the ability of future generations to meet their own needs" (Brundtland, 1987:8). Sherlock too shares Brundtland's definition: "Sustainability means living now in such a way that we do not threaten future life" (Sherlock, 1991: 293). It is a balanced relation between human needs and natural resources: "Sustainable architecture is the product of the interaction between nature and human's needs, based on respect for human life and the natural world" (http://archnet.org/forum/view). This would seem to indicate that any work of architecture that meets these needs can be defined as sustainable architecture.

6.2.2 Sustainable design

Foster and Partners define sustainable design as: "Creating buildings which are energy efficient, healthy, comfortable, flexible in use and designed for long life" (Foster and Partners, 1999).

Sherlock emphasises reductions in the consumption of energy as steps towards sustainability, and argues that the best way for this is "…to reduce our need to travel … to live in compact cities where everything is close at hand" (Sherlock, 1991: 293). Hillman refers to making future cities more sustainable from a broader perspective of "…reducing demand for space and water heating, power, lighting, use of motorized transport and increasing self-sufficiency in lifestyle practices, improved access to facilities used in daily life, more flexible use of buildings, more recycling, and more use of land for growing food" (Hillman, 1996: 42).

Edwards argues for sustainable development in the design of housing in his book *Sustainable Housing; Principles & Practice* stating that "…living in harmony with the environment has become an essential component of the design of homes and neighbourhoods in the third millennium" (Edwards, 2000: 7). A central role should be given to both architecture and urban design if we need to achieve sustainable housing in any society. Furthermore, "…sustainable housing depends upon it being valued by tenants or owners. The roots of this reside in perceptions of health, comfort, flexibility of use and enhanced asset value. Housing is not sustainable if it is cold, damp, unhealthy, expensive to run and deteriorates in financial value. Neither is the community sustainable if there is a fear of crime, if employment is not available or if

the schools and health clinics provide a poor service" (ibid: 25). In Hilary Armstrong's interpretation of sustainable housing, "...housing is sustainable if everyone has the opportunity of access to a home that is decent; if it promotes social cohesion, well-being and self-dependence" (Armstrong in Edwards 2000: 2).

Housing almost certainly has a greater influence upon global and social harmony than any other building type. Family life, community cohesion and ecological well-being need to be supported by housing. Housing design, how we live, and the environmental consequences of the different choices we make are needed to achieve true sustainability. Furthermore, transport as a major source of CO_2 emission levels, is a useful indicator of the impact of housing sustainability (ibid: 38).

Urban sustainability should be defined to include the minimisation of the use of non-renewable resources, the achievement of the use of renewable resources, staying within the capacity of local and global waste-absorption limits and meeting basic human needs. This should be done in order to assure that human settlements are sustainable and that environmental, economic, social and technical conditions are met (Choguill, 1996: v).

6.2.3 Sustainable construction

Sustainable construction is: "The creation and management of healthy buildings based upon resource efficient and ecological principles" (BSRIA Centre for Construction Ecology in Edwards 2000: 125). Sustainable construction is dependent upon three key issues: a) Minimum disruption to the local environment. b) Construction system. c) Construction waste management.

6.3 Purpose and significance of sustainable development

Historically, people have taken good care of the natural assets of their surrounding environment, such as using lands which were unsuitable for agriculture for housing and using renewal building materials which could be used also in future constructions (see Figure: 6.3). These days, however, people have come to ignore the importance of the sustainability of their immediate environment due to the increase in their mobility and

their freedom to purchase their requirements from farther away. In any programme of the built environment, impacts against sustainability are of the utmost importance (Salamati, 2001: 97).

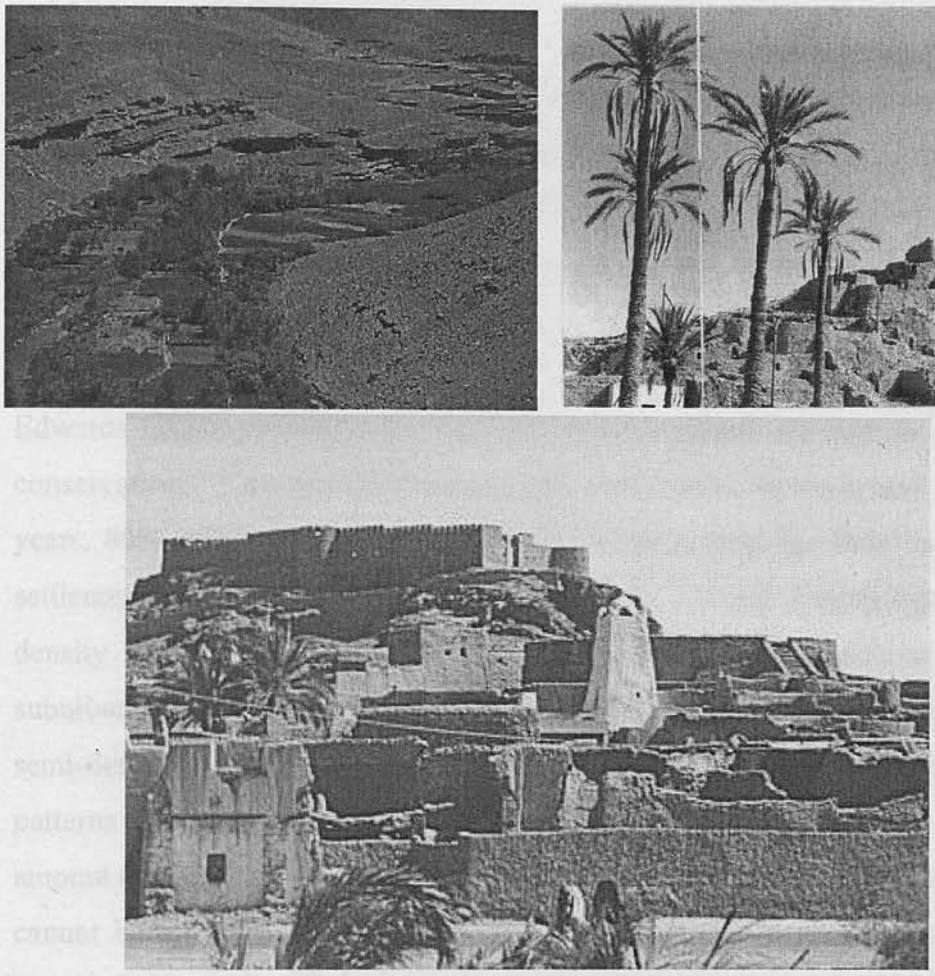


Figure: 6. 3 Three Libyan traditional cities in mountain and desert regions where the agricultural lands are perceived and using renewable building materials for housing. (Source: google.com/ Libya/amigos).

Edwards (2000) emphasises the importance of the home as a starting point for successful communities: "Although a house is a home, it is also the main building block of successful communities. The home as a family unit addresses three distinct policy territories, economic development, social welfare and environmental welfare. The more the interactions are explored, the greater the success of the housing enterprise" (ibid: 25).

The concept of the sustainable neighbourhood is equally important and should be studied to achieve the objective of sustainable development. Any strategy of sustainable

housing needs to study transportation and urban form. These today are seen as essential elements and constitute a move from the low energy house to the sustainable neighbourhood (ibid: 7-8). It is on both scales of house and neighbourhood where building and planning legislation can make a significant contribution.

Christopher Alexander states: "Cars give people wonderful freedom and increase their opportunities. But they also destroy the environment, to an extent so drastic that they kill all social life" (Alexander, 1977: 64). Thus, cars are good for long trips but not for short ones inside neighbourhoods. The solution to the problem might be in the design of homes and neighbourhoods that are compacted and invite walking or the usage of bicycles, taxis or public transportation.

Edwards (2000) demonstrates that land is an important element to achieve resource conservation: "...energy and water are key resources but so too is land. Over the past 50 years, 80% of all land lost from agricultural production has been the result of urban settlement growth, much of it for housing. The housing created has often been low density and supported by other land consuming activities such as business parks, suburban retail areas and massive road construction. Suburban growth in detached and semi-detached houses consumes four times the land area per family housed, as urban patterns of living (compact terraces and walk-up flats) with nearly three times the amount of energy per household (in space heating and transport). Resource conservation cannot be achieved without a fundamental review of the type, form and location of housing" (Edwards, 2000: 23). The author believes that agricultural land in Libya, which is very scarce, should be protected from urban settlement growth in order not to compromise the life of future generations.

6.4 Sustainable development for housing

The main concern of sustainable housing is to meet the accommodation needs of the citizens and the environment has to be safeguarded from deteriorating to the extent that it diminishes the ability of future generations to meet their housing needs. Furthermore, sustainable housing should not be limited to meeting basic needs, but expand to improve liveability (Chiu, 1997).

6.4.1 Sustainable housing from an environmental perspective

It is important to add an ecological dimension to the production and consumption processes of housing when applying the environmental concepts and principles to housing (Rydin, 1992; Chiu, 2000). Residential activities on the ecological system as well as the environmental quality of the housing conditions of the residents, who are component members of the ecological system, are the major concerns of a sustainable environmental perspective. Chiu (2004) suggests dividing these processes into six phases where the possible environmental impacts can be examined at each stage.

The stages are: the project conception and planning, design, construction, building use, refurbishment and demolition. At the project conception and planning stage, the environmental impact of the site selection, the development intensity on the local ecological system and the opportunity to optimise existing infrastructure should be estimated. The design stage should consider minimising future alterations, enable energy saving, efficient waste management and minimum resource utilisation, using building materials and construction systems which are environmentally friendly and encourage simple lifestyles.

In Tripoli public housing, most houses use mechanical air-conditioning for cooling due to unsuitable building materials without thermal insulation having been used and the designers not attempting to include solar energy for heating in wintertime. At the construction stage, the emphases should be on minimum disturbance to the local environment, construction system and construction waste management. At the building use stage, the environmental impact of residential activities, the quality of the living environment, the use of domestic fuel and intensity of air-conditioning use should be considered. At the refurbishment stage, three issues should be taken into account: more care that disturbance to the nearby environment is minimised, management of construction waste and choice of refurbishment materials. Finally, at the demolition stage, resource conservation, the environmental impact of the demolition process, economic building life vs physical life, heritage preservation, the improvement of the local environment through redevelopment and the recycling of building materials should all be addressed carefully (Chiu, 2004: 3).

6.4.2 Sustainable housing from an economic perspective

"Sustainability refers to the ability of the natural environment, or the ecosystem, to accommodate human activities, especially those constituting economic development, in the long term" (Chiu, 2004: 6). Furthermore, Chiu demonstrates that there are two fundamentals for housing to be economically sustainable:

1) The benefits to housing providers and producers must be more than or equal to the costs of housing production given the housing demand levels; and
2) The production and consumption processes must be within the environmental capacity to provide and absorb, given the mitigating technology.

The first has always underpinned the operation of the housing sector. It relates to the ability of housing consumers to afford quality housing. The second refers to the identification of the environmental gains and costs of housing activities. However, the avoidance of the long term has an unfavourable impact on the sustainability of the natural environment. Incidentally, it is important to know the importance of the development of technology, building materials and housing designs to mitigate the environmental impact of housing activities and their implication for the financial viability of housing projects. As well as to understand the central role of affordability, value and habits, those which enhance environmentally-friendly consumption behaviour (Chiu, 2004: 4).

6.4.3 Sustainable housing from a social and cultural perspective

Yiftachel and Hedgcock (1993) define urban social sustainability as: "...the continuing ability of a city to function as a long-term viable setting for human interaction, communication and cultural development" (Yiftachel and Hedgcock 1993: 140). Vitality, solidarity and a common sense of place among city residents indicate a sustainable society (ibid: 140). The problem of achieving sustainable development is thus cultural more than technical.

Social sustainability in housing also requires that the structure is adaptable. Societies constantly seek more and new opportunities. Houses that cannot allow for changes will

become alienating and may even be abandoned. Sustainable communities need to allow families to invest long periods of time in their neighbourhood (Edwards, 2000: 25).

To achieve a sustainable and balanced society in housing requires a number of difficult issues such as social exclusion, crime and employment opportunities, as well as the usual priorities of energy and environmental performance to be addressed (ibid: 124). Communities need to have access to employment, to healthy and safe environments, and to mobility.

Chiu (2004) summarises four aspects that relate to the social sustainability of housing:

1. The social preconditions must be conducive to the supply and demand of environmentally sustainable housing;
2. There must be an equitable distribution and consumption of housing resources and assets;
3. Harmonious social relations must exist within the housing system; and
4. An acceptable quality of housing and living environment must be provided.

The above four aspects highlight a wide range of social issues. The first aspect, relating to the social preconditions contributing to environmental sustainable housing, includes values, habits, rules, and life style, environmental awareness, regulations, etc. The awareness and the motivation to live in an environmentally sustainable way will affect housing producers and connect government organisations in many ways, such as in the choice of housing sites, land use planning principles and intensity, the use of environmentally friendly designs, building materials and construction methods, the consideration given to the liveability of the property and the impact of the design on the physical quality of the life of the residents (Chiu,2003a). For housing consumers, values and norms which are preventive of the environment include decreases in energy consumption, best use of green design and measures inherent to the property. The most important are, however, those which maintain economy, and which favour and are keen to spend more to acquire housing and which is built on environmentally friendly principles and which use green building materials (Chiu, 2004: 4).

Equity distribution and consumption

Housing equity and housing standards, affordability, the role of the government in housing, and housing financial support policies are issues relevant to the aspect of equity distribution and consumption. Equity is frequently connected with justice or fairness. In considering whether distributional policies such as housing policies are equitable, attention is often given to the distribution of benefits and losses, and by how much. To examine whether distribution is fair and just, Chiu (2004) argues that two operational concepts are often used:

a) Horizontal equity – equal treatment of people in equal positions; and
b) Vertical equity – unequal treatment of people in unequal positions.

Translating these concepts into housing policies, Chiu (2004) argues that equitable housing policies should maximise choices in housing services, therefore they must be desired by home buyers, enhance housing mobility and prevent housing programmes which, while benefiting some groups of the population, unfavourably affect the chances of others to get desirable and affordable housing(Chiu, 2004:5).

Harmonious social relations

Social sustainability should concern reductions in social discontinuity and conflicts as well as the reinforcement of social cohesion and social stability. These principles can be applied to housing as having good harmonious relationships between housing producers and users. The property-owner and renter relationships are the main concerns with this feature. The main concerns are to resolve conflicts of comfort and the building up of social capital in the housing arena. There are many ways to achieve these, hinging upon the social settings and the social structure. The participation contributes to the building of a more harmonious relationship between the housing producers and the inhabitants, or a stronger sense of community among the residents (Chiu, 2004:18).

Quality of housing and the living environment

These two components apply to the inner housing conditions and the immediate environment, as maintained and examined earlier under environmental sustainability (6.4). The social dimension of housing conditions could comprise additional

components, such as neighbourliness, social mix, life style and be affected by housing design and community sense.

The cultural sustainability of housing can be related to the preservation of housing heritage. The physical form of housing reflects the adaptation of residents to the natural habitat and how it evolves with time and the progression of technology. Thus the physical form becomes a part of culture itself. The configuration of housing's internal spaces is an outcome of socio-cultural values, customs and practices as well as enhanced by housing legislation and roles. While the external forms of housing are the result of the availability of building resources, the climatic conditions, the construction capability of the inhabitants and the aesthetics of specific communities over specific periods of time (Chiu, 2004: 5). Many relationships and interactions between man and the natural environment are reflected in housing forms. These forms present a clear identity to a culture, particularly in the early periods when man has a strong connection directly with natural resources. The transformation of a culture and the cultural identity of a place are embedded in housing forms. It represents the aesthetic and the artistic dimensions of culture, as well as the 'way of life' of a people. The conservation of residential buildings for aesthetic and heritage values enhances the continuation of a culture.

The design of residential buildings, when enhanced by housing legislation that embodies contemporary local cultural and aesthetic values, mixed with those of the past, enriches and sustains the cultural identity of a place.

Taking these themes together, sustainability in the field of housing should address five distinct fields which are:

- The conservation of natural resources (land, energy, water);
- The sensible re-use of man-made resources;
- Maintenance of ecosystems and their regenerative potential;
- Equity between generations, peoples and classes;
- The provision of health, safety and security (Edwards, 2000: 20).

With these fields in mind, the researcher believes that the concept of building and planning legislation should address land-use policy, density of development, integration of transport, social mix, ownership and tenure mix. These related issues all become important for planning and building legislation in relation to housing estates and this needs to be recognised and addressed in legislation.

Significant modifications to the traditional standards, approaches, methods and legislation are required to ensure that environmental impact assessments offer an appropriate aid to environmental management and decision making (Brown and Jacobs 1996: 493).

No society is balanced and in harmony with nature unless housing is sustainable. Housing, as against individual houses, is central to the perceptions of the quality of life; attractive homes in well managed estates are as important as education and job security to urban satisfaction (ibid: 12). Thus Abdou and Salama (1999) describe sustainable buildings as those that "create delight when entered, harmony when occupied, regret when departed" (Abdou and Salama (1999: 3).

6.5 Some guidelines for sustainable housing

From the previous sections, a clear interpretation of the scale of the idea of sustainable development was presented. In this section the author aims to extrapolate some guidelines from sustainable housing development which will be used to examine housing in Tripoli with a view to improving and filling in the gap in building and planning legislation.

6.5.1 Sustainable development in the dwelling

1. Dwellings, from the design point of view, should make use of natural ventilation and renewable energy sources for heating and cooling systems and for health and comfort protection. This system should be ecologically sympathetic.
2. The design of dwellings should be flexible and adaptable to allow for future changes in family organisation.

3. Dwellings should use more natural durable construction and recycled materials that are available in the local region and which are likely to be long-lasting and comprise environmentally sound construction techniques.
4. The dwellings should be compacted for less land use, a reduced need for motorised travel, effective thermal defence for good microclimatic performance and efficient use of infrastructure and the protection of agricultural land.
5. The dwellings should be designed to allow for the cultural way of life of the residents. In Tripoli this would mean organising of internal spaces and direct connection with external spaces such as windows, balconies and doors at the dwelling level should provide the occupants with a good degree of privacy which is needed for Libyan society to be sustainable.
6. Dwellings should be designed in compact form. This would lead to having high density, low-rise buildings.
7. Spaces in the dwelling are recommended to be designed for multiple uses at different times of the day.
8. Dwellings should have effective systems to reduce domestic water consumption by the recycling of grey water for use in flushing WCs, the collection of rainwater for drinking after cleaning and for garden irrigation.

6.5.2 Sustainable development in the neighbourhood scale

1. Settlements should be close to public transport routes to help reduce private car use. Transport systems will give priority to pedestrians and cyclists and to less pollution.
2. Street and unit layouts should introduce shade for walkers in hot climatic regions and safety, particularly for children, through the provision of pedestrian lighting and traffic calming.
3. The neighbourhood should generate a sense of community, in other words, the physical nature of the spaces should accommodate people's sense of coherence. The layout and the provisions within the settlement should help create a feeling of community for a consolidated, sustainable neighbourhood.
4. Neighbourhood communities should be inclusive in nature to prevent, for example, the segregation of poor residents and to increase the co-operation between residents thus enabling the creation of sound communities.

5. Each neighbourhood should provide safe and enjoyable play areas for children.
6. The design of neighbourhoods should take a consideration for heat gain, less wind influence and low resource use.
7. Trees and plants are important for the open spaces, streets and parking areas to reduce CO_2, provide shade and for their aesthetic value.
8. The neighbourhood should meet the daily needs of all inhabitants. Disabled access should be provided to all public services and facilities.
9. The centre of neighbourhoods should be an attraction point for local residents, meeting their everyday needs and reducing the need for travel outside the neighbourhood.
10. The design of settlements should have a hierarchy of spaces in the level of streets and dwellings from public, semi-public, semi-private and private for the preservation of social and cultural values. This is especially important to Muslim societies.
11. Settlements should promote the effective protection of the environment by protecting green belts, agricultural land and employing strict waste and pollution policies.

6.6 Conclusion

The chapter discussed and provided an overview of sustainable development as an important approach which deals with the natural environment generally, and the built environment in particular, to improve people's quality of life. The chapter addressed the theory of sustainable development and related its concept to planning and building legislation where a good contribution could be made.

The chapter described and assessed three dimensions of sustainable development in housing and outlined some definitions of its purposes and its significance. The three dimensions of sustainability are environmental, economic and socio-cultural sustainability. Ecological sustainability aims to protect resources, where preservation of the environment is deemed essential for its protection as a valuable heritage to the extent that it can meet the housing needs of future generations. Economic sustainability requires dealing with long-term resource productivity and low-use costs and cultural

preservation in the form of built heritage conservation. Social sustainability in housing requires that the structure is adaptable. Houses that cannot allow for changes will become estranging.

The limitation of current Libyan legislation under the concept of sustainable development can summarised in the following:

1. The legislation has no specific codes that deal with pollution, waste and recycling at housing spaces.
2. The legislation does not deal with preservation of agricultural land, most of Tripoli public housing projects are in suburban estates and the zoning codes encourage housing projects to have more lands.
3. The conservation of natural resources, such as land, energy and water are ignored within the context of Libyan planning and building legislation.
4. Many housing estates suffer from poor workplaces, under-performing schools and access to public transport is too poor and many people suffer from social exclusion.

Meeting the accommodation needs of the human race is the main concern of housing. Sustainable development aims to not only meet basic needs, in addition it implies that there will be improvements in liveability, of shelter, infrastructure support, safety, a pollution-free environment and neighbourliness. Moreover, the chapter presented some guidelines for sustainable development applicable to housing in Libya, to improve the quality of life in contemporary housing and to fill in the gap in building and planning legislation. These will be examined in more detail in Chapter Nine, Tripoli case studies.

Chapter Seven:

Space Syntax

Chapter Seven

Space Syntax

7.1 Introduction

The purpose of this chapter which is concerned with space syntax, is to identify the theoretical issues in the design of space and the consequences for Libyan planning and building legislation. Chapter One states that the research methodology aims to lead to the building of a body of knowledge that could inspire Libyan legislators to improve housing legislation. It is necessary, therefore, to be able to understand how housing spaces affects people's appreciation of their everyday life and their activities within their domestic environment. This approach demands an understanding of spaces as a social phenomenon. The theory of space syntax has much to contribute to this matter.

In 1984 Bill Hillier developed a theoretical approach to space based on the understanding that different societies and ways of life tend to generate specific ways of using space. This social space is manifested in the way it is subdivided into a hierarchy that ranges from public, prominent and accessible spaces, down to private, individual and enclosed spaces. This insight led him to propose a way to 'read' how societies constructed their spaces – internal and external - such that their settlements suited their innate priorities and customs.

Muslim societies place a great deal of emphasis on the use of space. The Islamic way of life requires that maximum segregation is required for women in the house from outside activities to give them full privacy. On the other hand, maximum integration is needed for the men to enable them to participate fully in community life. These emphases are clearly observed in traditional Arab cities, such as Tripoli Old City. Some spaces need to be very highly integrated, some very highly segregated and, perhaps unlike many western cities, in Arab cities, there are fewer spaces that operate ambiguously in this manner. The way spaces are integrated or separated in Muslim cities therefore has a major and immediate impact on determining whether or not the inhabitants are able to maintain their way of life (Emhemed, et al. 2004:13).

Figure: 7. 1 Tripoli Old City's organic urban fabric as a result of residents' collective actions and values. (Source: Survey department, Tripoli).

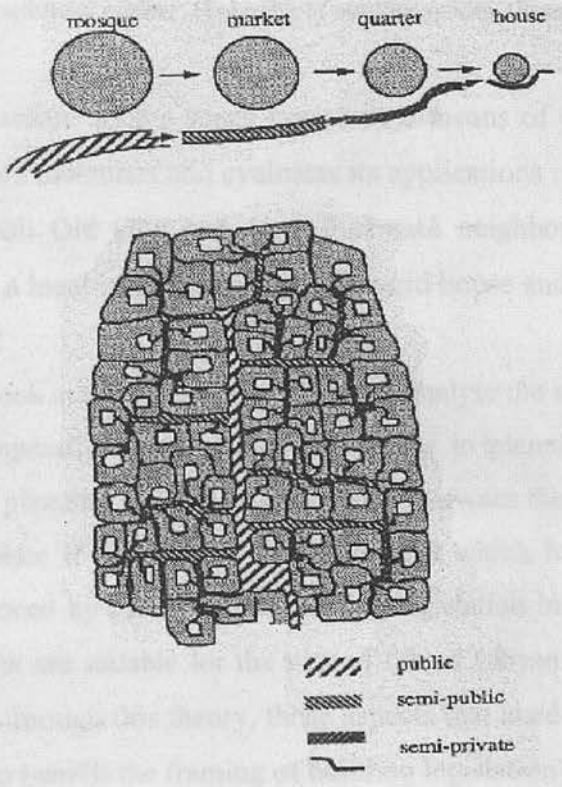


Figure: 7. 2 The traditional Muslim city hierarchy of outdoor spaces and street width. (Source: Mortada, 2003:86).

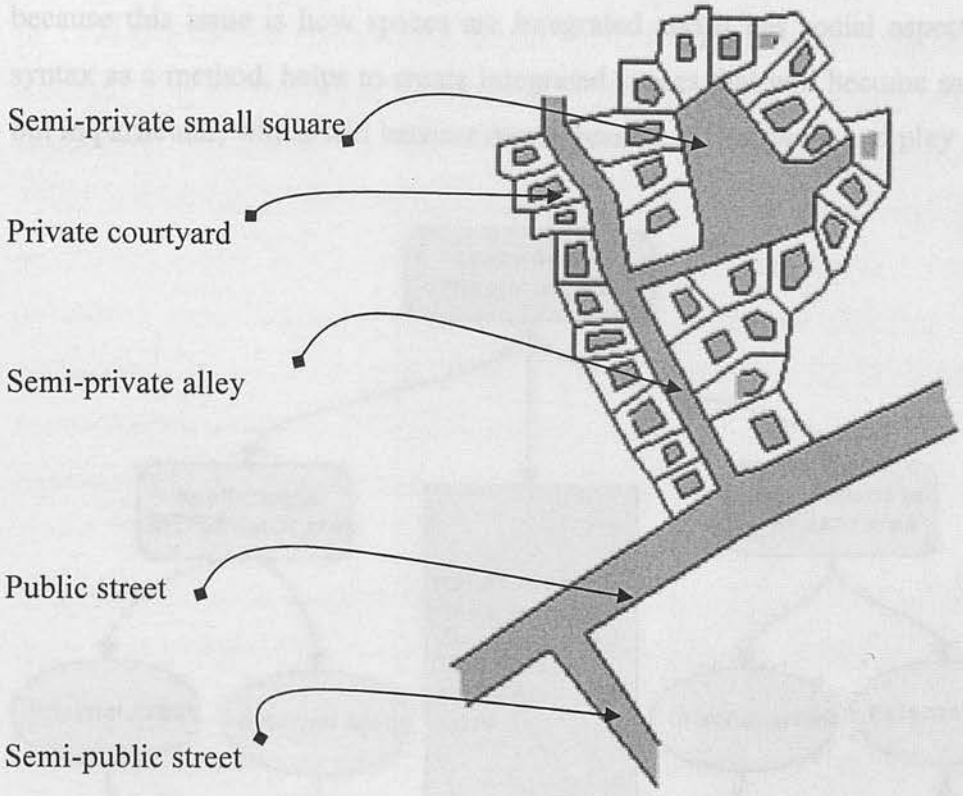


Figure: 7. 3 Tripoli traditional quarter. Hierarchy of outdoor spaces. (Source: the author).

This research therefore adopts space syntax as a means of exploring the ideas behind this concept. It then examines and evaluates its applications in external spaces in Tripoli City centre, Tripoli Old City and *Hay Al-akwakh* neighbourhood (case study 1) and internal spaces in a local level traditional courtyard house and modern flats.

It is necessary to look at the three external areas to analyse the spatial properties of the three areas using a comparative study due to differences in planning patterns emerging from adopting different planning and building legislation between the Old City and the New City. Moreover, to explore if the idea of neighbourhood which has been adopted for public housing and enhanced by planning and building legislation in Tripoli, has achieved good external spaces that are suitable for the way of life of Libyan families. Additionally, the aim is to identify through this theory, those aspects that need to be addressed and which can be expected to benefit the framing of building legislation in Libya.

One of the problems associated with housing legislation is that it has a major effect on how people integrate, connect and relate housing to the existing cities and how they

integrate the spaces within the house and layouts in development among themselves because this issue is how spaces are integrated and it has social aspects. Thus space syntax as a method, helps to create integrated spaces that will become safe and useable but in particular, which will become more pleasant to live, work and play in.

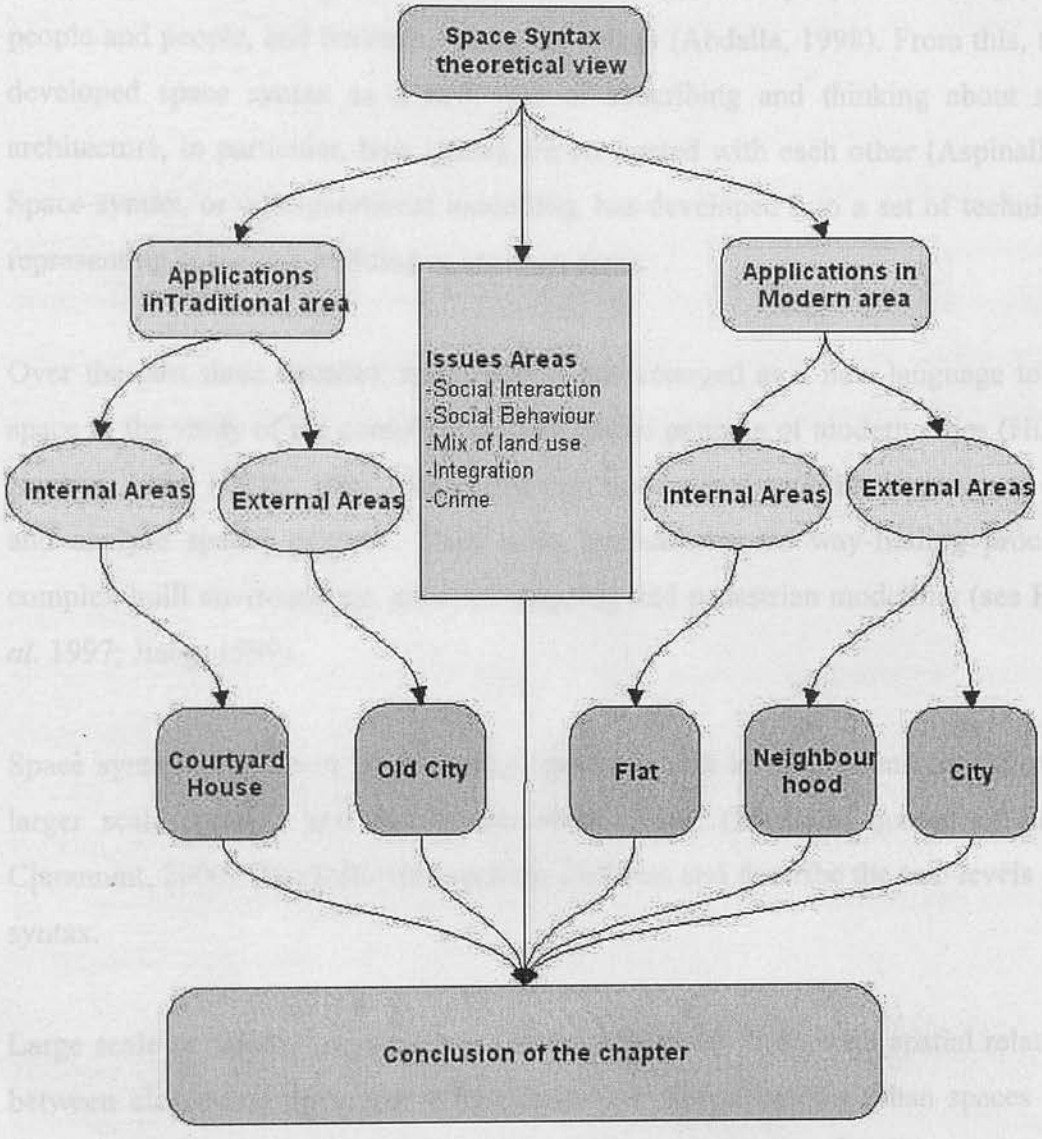


Figure: 7. 4 The chapter's structure. (Source: the author).

7.2 Space Syntax

In 1984 Bill Hillier and his team at the Bartlett School of Architecture in University College, London developed a method that described and analysed space both at the urban level and viewed the building as a number of relationships between its spaces. These relationships establish links and distances between people and things, between people and people, and between things and things (Abdalla, 1998). From this, the team developed space syntax as a new way of describing and thinking about space in architecture, in particular, how spaces are connected with each other (Aspinall, 2003). Space syntax, or configurational modelling, has developed into a set of techniques for representing space in a building or in urban areas.

Over the past three decades, space syntax has emerged as a new language to explain space in the study of the complication and spatial patterns of modern cities (Hillier and Hanson, 1984; Hillier, 1996). Many research studies deal with this language to describe and analyse spatial patterns. Their main applications are way-finding processes in complex built environments, criminal mapping and pedestrian modelling (see Hillier *et al.* 1997; Jiang, 1999).

Space syntax as a theory of analysing space has two levels of considering space, the larger scale 'global' and the smaller scale 'local' (Montello quoted in Jiang and Claramunt, 2000). The following sections illustrate and describe the two levels of space syntax.

Large scale or 'global' organisation (Hillier, 1983: 49) deals with spatial relationships between closed and open spaces (buildings and streets) within urban spaces inside a city, a town, a village, an urban neighbourhood or a group of buildings. Large scale space is composed of small scale spaces. Hillier and Hanson (1984) point out that understanding this relationship is to facilitate encounters between inhabitants, and between inhabitants and strangers. Furthermore to understand urban form and its use depends on how a space relates to other spaces in a system and how people interact within different spaces. Therefore this understanding leads to a predictive design tool for new urban developments (Aspinall, 2003). Large scale or global organisation uses include measuring pedestrian movement and criminal mapping (Major *et al*, 1997).

Moreover, it has been found that space syntax can be a valuable tool for the prediction of people's movements in urban environments. Based on the relationship between human spatial behaviour and urban morphological structure (Jiang and Claramunt, 1999). One consequence of many studies of urban spaces by space syntax found that integrated spaces carry greater pedestrian flows than more segregated ones. Thus a more integrated area is likely to have less crime than a more segregated one (Hillier and Shu, 1999).

The local scale deals with interior spaces within buildings and with the people that inhabit them. The idea behind local scale analysis is to know how social proceedings are mapped into the spatial structure of buildings and how this spatial structure affects these social proceedings. Space syntax analysis shows how spaces link within a building. Each internal space and its place in the linking of other spaces can give a sign of its importance for the users and can help define the deep function of the building.

7.2.1 Aims of space syntax

Hillier's book *The Social Logic of Space* (1984) records his attempt to outline a new theory and method for the investigation of the relationship between society and space. Firstly, it builds a conceptual model to investigate the relationship through "the social content of spatial patterning and the spatial content of social patterning" (Hillier, 1984: x). It then establishes "a descriptive theory of how spatial pattern can, and does, in itself carry social information and content" (Hillier, 1984: xi).

Hillier's theory develops a model in which the establishment of real or hypothetical schemes can be evaluated on a computer. It therefore provides a tool to advise architects and clients where best to locate their buildings within a social and spatial context. The space syntax allows factors such as 'connectivity[2]', integration[3]' and 'permeability' to be measured. This allows the impact of design proposals to be forecast in advance, for example, in terms of how these will affect existing patterns of pedestrian movement, space use, economic vitality and safety (Akins, 2003). This thesis focuses upon the

[2] - Connectivity of an axial line is defined as the 'number of axial lines directly intersected with that line' (Hillier and Hanson, 1984).
[3] - Integration value is 'an expression of the extent to which a street or axial line draws all other streets or axial lines to itself and renders them shallow as destinations from that point' (Hanson, 1989: 48).

aspect of integration because it is the most important and the core concept in spatial analysis of the space syntax and has broader measures in terms of global and local integration, while connectivity measures only local morphological property of a system. Integration of space in a settlement is defined as '*...the mean number of lines and changes of direction that need to be taken to go from that space to all other spaces in the settlement system*' (Abbaszadegan, 1997: 3).

The aims of using space syntax to study spaces within buildings are to discover how different groups of people inhabit, interact, and carry out their activities in buildings. In other words, how these social events are embodied into the spatial configuration of buildings, and how this spatial configuration influences these social events (Aspinall, 2003). Moreover Hillier *et al.* (1987), in their study of vernacular farmhouses in Normandy, set the aims of spatial analysis as:

1. To see how far syntactic representations and analyses could clarify the relation between patterns of space and their use;
2. To ascertain how far regional or other types might be suggested by such an analysis; and
3. To explore the possibility that certain known traditional themes might be reproduced in at least some of the houses, and that these themes might be clarified by syntactic analysis (Hillier *et al.* 1987: 366).

7.2.2 How does space syntax analyse spaces?

Spaces can be seen according to space syntax analysis as a one-dimensional or axial structure and a two-dimensional or convex structure. To study any given city or settlement, a suitable map should be prepared which embraces all the spaces within the area under study, divided into convex spaces (convex map), the lowest number of widest and largest spaces that cover the whole system (Abdalla, 1998) (see figure: 7.1). A convex space is one in which any two points in a convex segment can be joined by a straight line which does not go outside the boundaries of the space (Hillier, 1983). Then all convex spaces should be linked together by the longest and fewest numbers of straight lines, making what is called an axial map. An axial map is a representation of the continuous structure of open space (see Hillier and Hanson, 1984: 17).

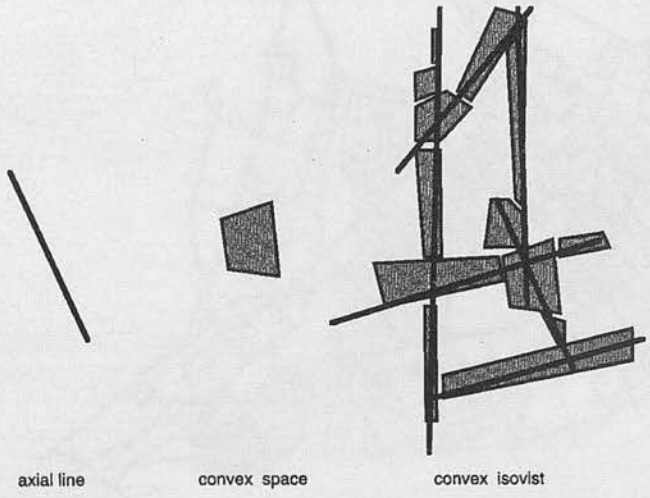


Figure: 7. 5 Illustrates how external spaces are seen and analysed according to the space syntax method. (From Hanson, 1998: 40).

After preparing the axial map, a computer analysis demonstrates the most integrated, intelligible and shallow areas in red colour lines, others with yellow, green and blue lines are less integrated in order, which means that the blue colour represents the most segregated, unintelligible and deep areas (see Figure: 7.6). Integration is, according to Hillier *et al.* (1993), of all measures produced by the integration method:

> *"...the most important global measure... which measures the mean depth of every other line in the system from each line in turn, relativised with respect to how deep they could possibly be with that number of lines, then standardised as shown in Hillier and Hanson (1984) and discussed by Krüger (1989). The most integrated lines are those from which all others are shallowest on average, and the most segregated are those from which they are deepest"* (Hillier et al., 1993: 35).

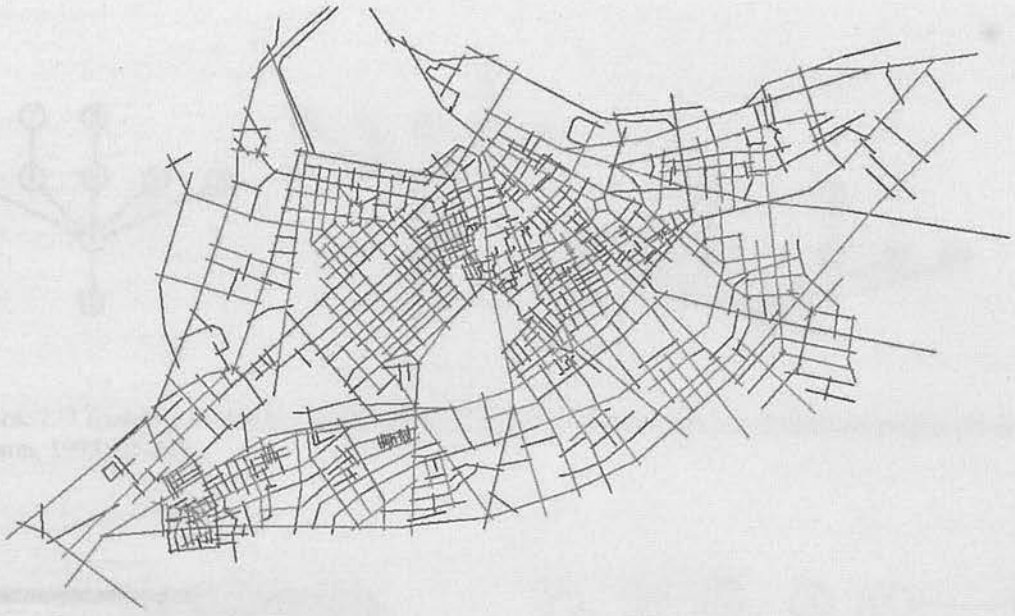
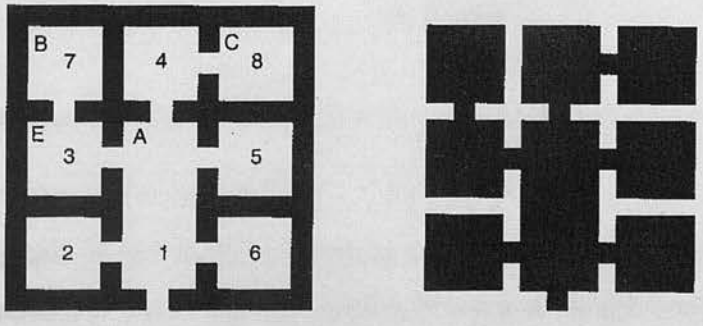


Figure: 7. 6 Example of external space analysis (axial map) of central area of Tripoli. (Source: the author).

At a small scale, the spaces within a building are represented by a *justified graph* or *depth diagram.* In this, each room is drawn as a dot and each connection between rooms as a line. This makes the hierarchy of the rooms within an organisation of spaces clear. Moreover, it is possible to use an axial map to analyse a large building.

In space syntax theory, depth means the greater the number of spaces you have to go through to get to another space, the deeper the system. On the other hand, shallowness means that the routes to the spaces from the outside are more direct (Abdalla, 1998: 186). The depth of the system is then compared graphically or calculated in numbers manually or using a computer to give an exact index of depth.



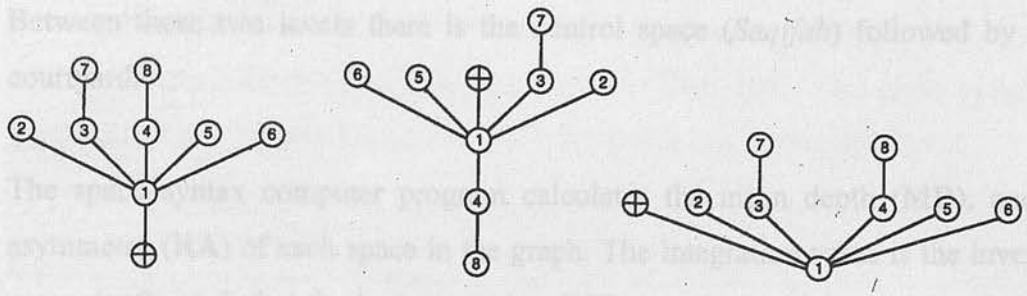
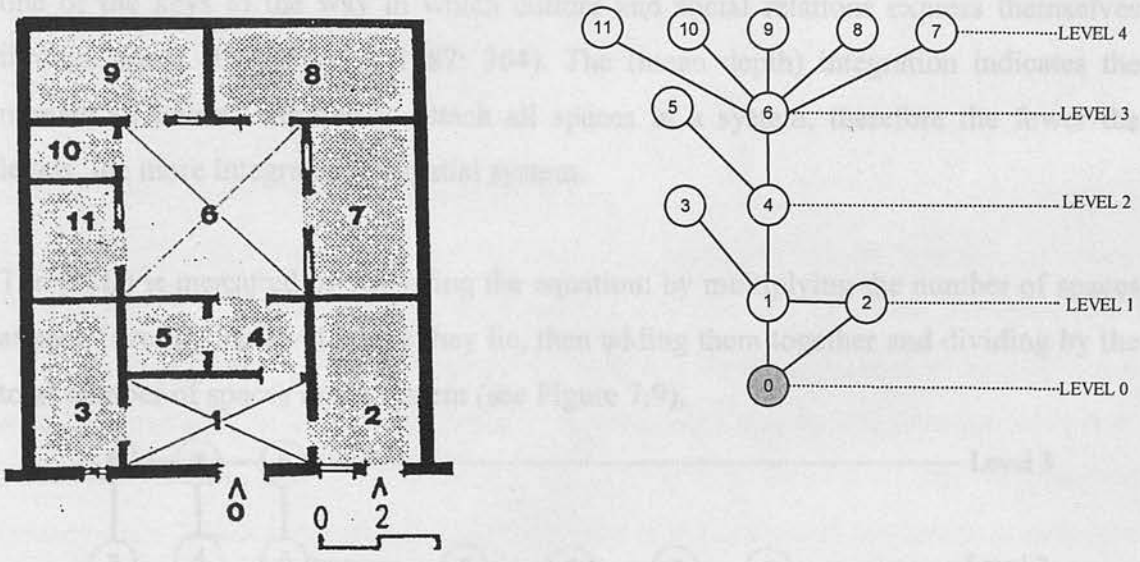


Figure: 7. 7 Example of internal spaces analysis; house plan, open space and justified graphs (from Hanson, 1998: 25-26)



0- Carrier space
1- Outer court
2- Men's sitting room
3- Guest's room
4- Saqifah
5- Store
6- Inner courtyard
7- Bedroom
8- Bedroom
9- Bedroom
10- Bathroom
11- Kitchen

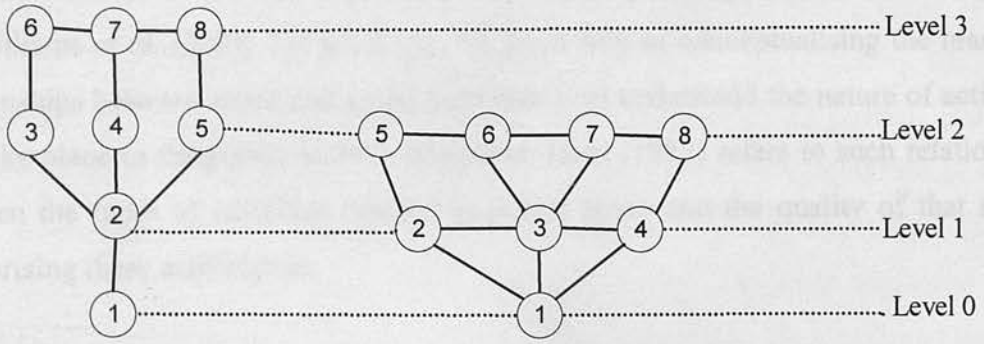
Figure: 7. 8 Plan and justified graph for a typical Libyan traditional courtyard house (Source: Abdalla, 1998: 205).

The justified graph of the traditional house (see Figure: 7.8) shows clearly how the spaces are connected to each other, the degree of integration and which spaces are at the shallow level and which at the deep level. As expected, the shallowest level is occupied by male guests and has direct contact with the public space (carrier space) usually the

Zanqa or main street, while the family area is at the deepest, most private level. Between these two levels there is the control space (*Saqifah*) followed by the inner courtyard.

The space syntax computer program calculates the mean depth (**MD**), and relative asymmetry (**RA**) of each space in the graph. The integration value is the inverse of the mean depth, such that the lowest number (**MD**) equals the highest point of integration. The integration value of a space expresses numerically a key aspect of the shape of the justified graph from that space. Different spaces have different integration values and the justified graph shows this difference visually (see Figure: 7.8). Such differences are one of the keys to the way in which culture and social relations express themselves through space (Hillier et al, 1987: 364). The (mean depth) integration indicates the number of levels[4] required to attach all spaces in a system, therefore the fewer the levels, the more integrated the spatial system.

The (**MD**) is measured by following the equation: by multiplying the number of spaces at each level by the level where they lie, then adding them together and dividing by the total number of spaces in the system (see Figure 7.9).



Example 1 Example 2

MD for example 1 = (1×1) + (3×2) + (3×3) / 7 = 16/7= 2.3

MD for example 2 = (3×1) + (4×2) / 7 = 11/7 = 1.6

Figure: 7. 9 Examples of calculating (MD). (Source: the author).

Relative asymmetry (**RA**) or relative depth or integration value is mean depth corrected for the number of spaces in a system. It allows integration to be measured and systems

[4] - Level means one step you pass from one space to get to another space.

of different size to be compared. To calculate relative asymmetry the following formula is used: RA = 2 (MD – 1) / K – 2 Where K is the number of spaces in the system and MD is the mean depth (see Hiller and Hanson, 1984: 108). This gives values varying between 0 for maximum integration and 1 for maximum segregation.

7.2.3 Aspects addressed by space syntax

After introducing above, the theory of space syntax, the importance to this thesis of integration and how it works in analysing spaces, this section deals with aspects that space syntax sheds light on and that can inform planning and building legislation. The aspects are social interaction, social behaviour, integration and segregation, mix of land uses and security and safety (crime).

7.2.3.1 Space syntax and social interaction

Layout design plays an important role in how the users will interact and use the space. Social interaction is the result of social activities within spaces. These activities could be inside buildings or in public spaces such as streets, squares, gardens and parks. These activities increase or decrease depending on the quality and spatial structure of spaces. As Williams *et al*, (2001: 12) point out, "A good way of conceptualising the manifold relationships between space and social activities is to understand the nature of activities that take place in the public realm". Moreover, Gehl (1987) refers to such relationship between the types of activities enacted in public space and the quality of that space, categorising these activities as:

Necessary activities which are necessary to everyday living – such as going to school or to work, shopping and waiting for a bus or a person. These activities have to take place, despite the quality of the space.

Optional activities which are desirable – such as reading in a park and having barbecues. These activities are especially dependent on exterior physical conditions and can be maximised in good quality environments and reduced in poor quality environments.

Social activities which involve interaction with other people in public spaces – such as children at play, chatting in the street, and meeting friends in coffee shops.

Generally, social activity takes place whenever two people are together in the same space. A good quality environment helps social activities occur more frequently due to the higher degree of optional activities taking place, at the same time they are not totally minimised in poor environments due to the presence of people carrying out necessary activities.

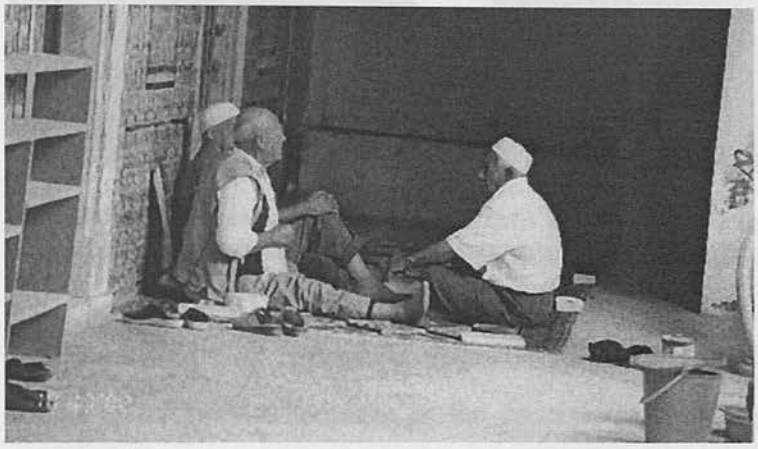


Figure: 7. 10 People chatting in Tripoli near a shop. (Source: www.galenfrysinger.com/tripoli libya museum.htm).

The urban layout design in Tripoli Old City gives many opportunities for social interactions to take place in its streets, squares and inside courtyard houses. The main streets with slow movement are full of mixed-use activities, such as different shops, coffee shops, public baths and public drinking wells *(sabeel)* which increase face-to-face contact among people. Here people meet, talk, swap their latest news and make new friends. Streets as well as squares are free from cars making them safe and useable, particularly for children. The availability of sitting places in shaded places near shops allows for social interactions to take place while allowing adults to watch over children and the behaviour of strangers.

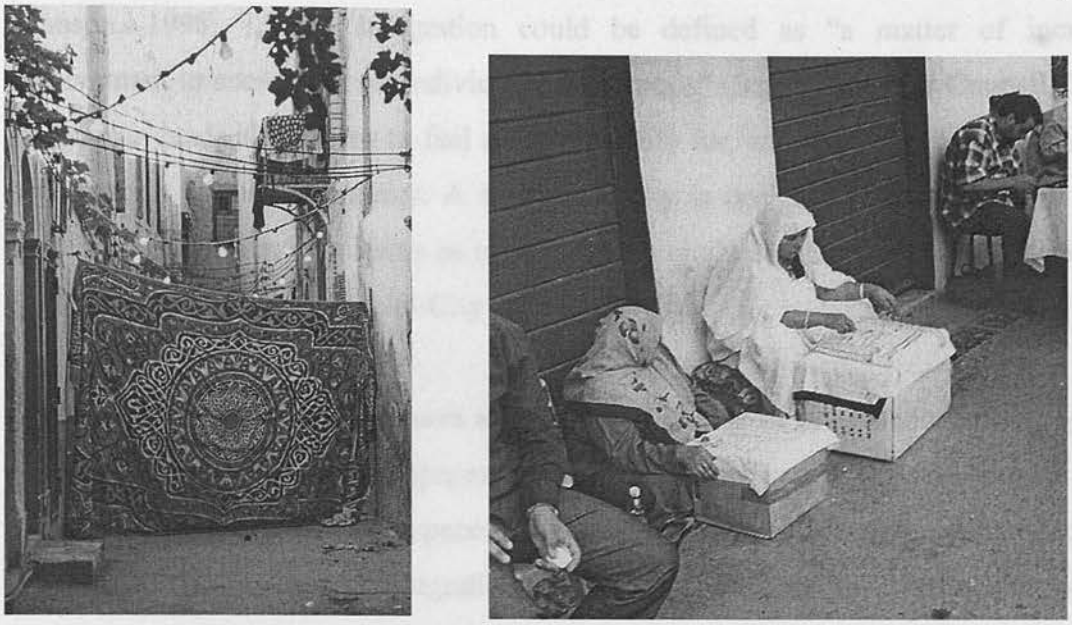


Figure: 7. 11 Illustrates social activities such as a wedding and selling *which* involve interaction with other people in Tripoli streets. (Source: www.galenfrysinger.com/tripoli libya museum.htm)

In Tripoli Old City residential areas, where the houses have courtyards, the women's social interactions take place in the courtyards, typically with their fountains, plants, children's play areas and sitting areas in the shade or the sunlight. The courtyard encourages women to talk, celebrate, work and make good relations with neighbours and female relatives. The design and location of the courtyard within the house is given its importance and confirmed by space syntax analysis. The author observes that in Tripoli contemporary housing projects, the social interaction is very poor due to the layout design and lack of facilities (see Chapter Nine for more details). This situation is found in many countries like Britain, as Hillier questions, "why the social housing projects of the 1960s and 1970s were not creating the communities the architects had intended; within years of completion, the estates were becoming run down and attracting crime" (Clark, 2000). He concludes that the way layouts are connected and work as a system is complicated and restricts the flow of movement. He suggests that if the space is clearly defined and is easier to walk around, it could become more popular to live in with good social interaction (Clark, 2000).

7.2.3.2 Space syntax: integration and segregation

Integration has emerged in empirical studies using space syntax method as one of the fundamental ways in which houses convey culture through their configurations

(Hanson, 1998: 1, 32). Integration could be defined as "a matter of increased involvement in society for all individuals and groups" (Stockholm City Council, 1998). Integration leads all citizens to feel a responsibility for, an affinity with and a sense of participation in the community. A segregated city is one in which people live under such vastly different conditions as to destroy the city's sense of social, economic and cultural community (Stockholm City Council, 1998).

The theory of space syntax focuses attention on the issue of integration and segregation within buildings and urban spaces. Space syntax method analysis of axial maps illustrates the most integrated spaces (lines) in red colour and the most segregation in blue colour. In this theory, integration and segregation is the descriptive core of how spaces are connected together and embed the social events. From this basis, space syntax researchers have gone on to develop investigations on issues such as criminal mapping, pedestrian flow and way-finding (Conroy-Dalton, 2001).

In Muslim societies, maximum segregation is required for women in the house from outside activities for full privacy. On the other hand, maximum integration is needed for the men to enable them to participate fully in community life. These different emphases are clearly observed in traditional Arab cities such as Tripoli Old City. Furthermore, the description of significance of integration and segregation differs from culture to culture, from inside and outside the dwelling. Good spatial configuration in buildings and urban layout embody this issue.

7.2.3.3 Space syntax and the mix of land uses

Mixed use is a tool to achieve maximum social interaction and integrate areas by inviting people to use spaces in a good way and to spend more time in them. Mixed use activities within streets and the diversity of land uses increases the presence of people in the streets, increases the time available for social activities and community interaction and ensures socially integrated areas (Taileb, 2002: 161). The author considers that using the space syntax method could be a useful tool to illustrate where the segregating streets that need to be improved by mixed use to have maximum social interaction should be located, thereby contributing to reinforcing the role of mixed use in integration areas and confirming its social importance.

Mixed use could achieve on two levels: mixed-use streets and mixed-use buildings. The mixed use on a site or a particular area is where there might be more shops, offices, houses, coffee shops, and education places. These activities work together horizontally, usually at ground level to formulate integrated, safe and sustainable environments. At the building level, a number of activities are contained on different floors in the one building. Usually, the ground floor is used for commercial purposes and the upper floors for residential purposes.
(http//www.calgarycommunities.com/cpted/cpted/pdf/glossary.pdf)

Planning and building legislation play important roles in making the external spaces work positively or negatively at mixed use. This legislation directed the urban design to formulate spatial configuration of an urban layout by destruction of land use and zoning by laws. Because of that, more emphasis on studying this legislation should assist developers to adopt designs for new developments that achieve social goals. Traditional urban environments (Tripoli Old City is one of them) have helpful mixed- use areas and high density that achieve some social goals and create an urban vitality (Jane Jacobs, quoted by Taileb, 2002: 161).

Land use plays an important role in the configuration of space network. One result of space syntax analysis is that they find more people on streets with shops than on streets without (Major *et al,* 1997). Space syntax looks at the relationship between movement, including pedestrians and vehicles and land use. Patterns of movement in fact, underlie many aspects of the distribution of land use, such as retail and residential, the spatial patterning of crime, the evolution of different densities and even the part-whole structure of cities. The influence of this relationship is so pervasive that cities are 'movement economies', in which the structuring of movement to dense patterns of mixed use encounters that characterise the spatially successful city (Hillier, 1996:6). Space syntax therefore has a distinctive contribution to make towards analysing urban areas to see how best to arrange buildings, streets and squares to maximise their use.

7.2.3.4 Space syntax and social behaviour

"People act and behave differently in different settings... This implies that the built environment provides cues for behaviour and that the environment can therefore, be seen as a form of non-verbal communication" (Rapoport, 1977).

Buildings operate socially in two ways: they constitute the social organisation of everyday life in that they are the spatial configurations of space in which people live and move, and in representing social organisation as physical configurations of visible forms and elements. Both social dimensions of buildings are therefore configurationally in nature, and it is the habit of the human mind to handle configuration unconsciously and intuitively, in much the same way as it handles the grammatical and semantic structures of a language (Hillier, 1996:4).

7.2.3.5 Space syntax and crime

One approach to determining the quality of social space to which space syntax analysis makes a good contribution, is crime in urban settings. Crime is related to socio-economic characteristics (familial status, income and youth) as well as to attributes of spatial configuration of layouts of urban settings (Hillier, 1988, 1996). Space syntax points out that crime was highest where pedestrian and vehicle movement was low and visibility to onlookers negligible. The purpose of analysing crime by space syntax is to increase safety and reduce opportunities for crime and to promote a feeling of community presence or visibility in residents' areas (www.loc-gov-focus.aus.net).

In 1995 Simon Shu, used space syntax techniques to make a more exact approach to crime and space, and this became the focus of his PhD under the supervision of Hillier at University College, London. He had looked at spontaneous settlements in Taiwan and observed that the farther one went into cul-de-sacs, the more one found iron locks on doors (as in many public houses in Tripoli see Chapter Nine, case study one), suggesting that isolation from movement in public space might be the hazard, not its presence (Hillier and Shu. 1999).

Hillier, in his 1980s studies of crime in different British cities, tried to plot the location of each crime exactly and used space syntax analysis to identify the spatial characteristics of each location. He asked why criminals would tend to select targets in

one type of location in an area with a homogeneous population. The answer is latent in public movement in space. Hillier considers that crime is less in spaces with less movement potential, as 'defensible space' would suggest. After using space syntax analysis, he concludes that burglaries are less frequent on the most integrated lines, and more frequent on the segregated lines. People are safer in spaces with more passers-by.

Space syntax analysis demonstrates that the isolated, zoned built form that is closed off from public movement increases opportunities for crime such as:

- Poor natural surveillance of the street environment;
- Unclear definitions between private and public spaces; and
- Exposed backs of properties.

7.3 Analysis of external (urban) spaces of Tripoli City

After introducing space syntax methodology, this section analyses the external spaces to examine and investigate the spatial configuration of Tripoli central area, Tripoli Old City and the *Hay Alakwakh* neighbourhood (see Figure: 7.12). This is to gain an understanding of the spatial configuration of the three areas and to find out to what extent the planning of external spaces is successful or unsuccessful in responding to the Libyan people's way of life. Three axial maps were prepared using a satellite map and master plan of Tripoli. These maps were then processed using Axman computer software in order to elicit their configuration values. The depth measures were obtained for each axial line. Then the more integrating lines emerge in the red colour and the segregating lines emerge in the blue colour (see Figures: 7: 14, 7.17 and 7.22).

From the axial maps of Tripoli central area and the Old City, it is clear that the urban tissue of both areas differs one from the other. Tripoli Old City has an organic Islamic city structure using Islamic planning and building legislation, while Tripoli central area is a pre-planned modern development which has adopted western planning and building legislation as mentioned in Chapter Four.

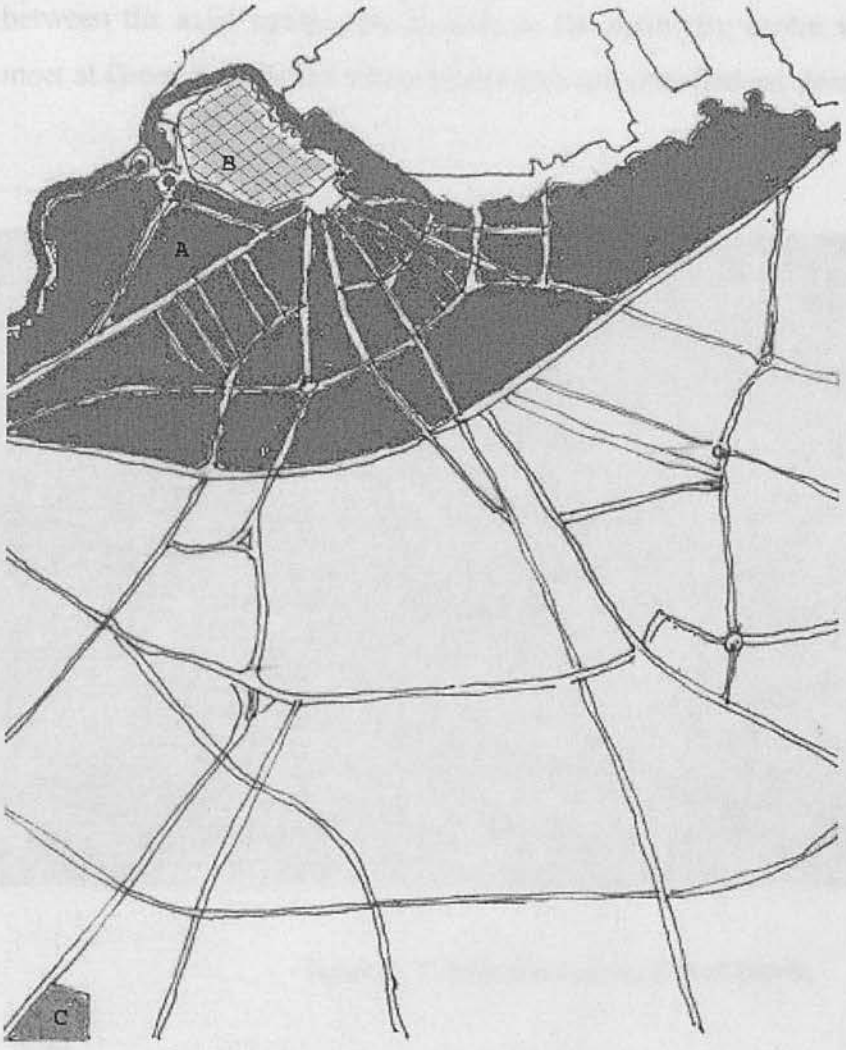


Figure: 7. 12 The location of the study areas A- the Old City. B- Tripoli central area. C- *Hay Alakwakh* neighbourhood.

7.3.1 The axial map of Tripoli central area

This section investigates the urban structure of Tripoli central area which includes the Old City using Integration *n* (global integration[5]) and Integration 3 (local integration[6]) (see Figures: 7.14 and 7.15). By examining axial map Integration *n*, the map shows the integration area is concentrated in the main city centre while the other areas (with the exception of the Old City) are evaluated as more segregated and very far from the integration areas. According to the space syntax general finding, these segregated areas have fewer activities and fewer people moving. The map shows a high integration

[5] Global integration means the relationship between every space in Tripoli central area to every other space in the system, relativised for the size of the system, because it measures relationships globally across the system.

[6] Local integration means examining only those spaces to only three steps away from every space.

between the axial spaces, particularly in the main city centre where the main streets meet at Green Square and where most retail activities and services occur.

Figure: 7. 13 Map of the central area of Tripoli.

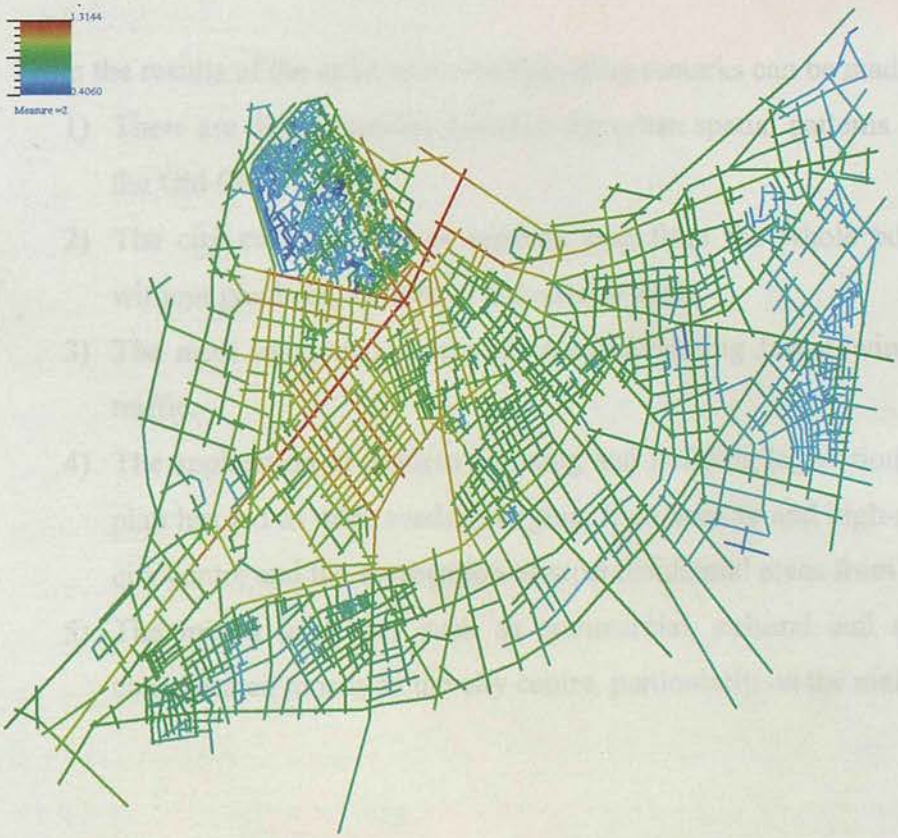


Figure: 7. 14 Axial map of Tripoli central area Integration *n* global integration. (Source: the author).

The main street *Omer Al Mukhtar* has the highest integration (red colour). This is because most of the services and activities are located in it and also it has a high mix of uses, such as shops, offices, coffee shops, banks and residential buildings. On the other hand, other areas, which are far from the centre appeared as segregated. These are mostly residential areas from which one needs to travel to get to the integrated streets. This result mirrors the real-life situation. The Old City appears as a collection of lines which have low global integration values due to having very little connection with the new city although according to local integration analysis it is shown to have a high integration level.

The local integration map of the central area (Figure: 7.15) shows more integrated streets such as *Al-Rshid street, Gamal Abed Al-Nasser, Mezran, Awal September, Ben Ashower* and *Al-Mansoura.* Moreover, two streets in the Old City appear as integrated streets. The first is the main street, *Suq Al-Turk,* the second is *Sidi Omran*, which occurs in the south boundary, where the city wall was demolished, and which connects the Old City to the New City.

From the results of the axial maps the following remarks can be made:

1) There are discontinuities between the urban spatial patterns of the new city and the Old City.
2) The city centre works as separate part from the whole body of the city and without good connections to the outside areas.
3) The most integrated streets are accommodating fast moving and high volume traffic.
4) The application of modern planning and building legislation to Tripoli's master plan has led to wide roads emerging, high density and high-rise buildings in the city centre and the segregation of most residential areas from the city centre.
5) The mixed land uses such as commercial, cultural and social activities are concentrated mostly in the city centre, particularly on the main streets.

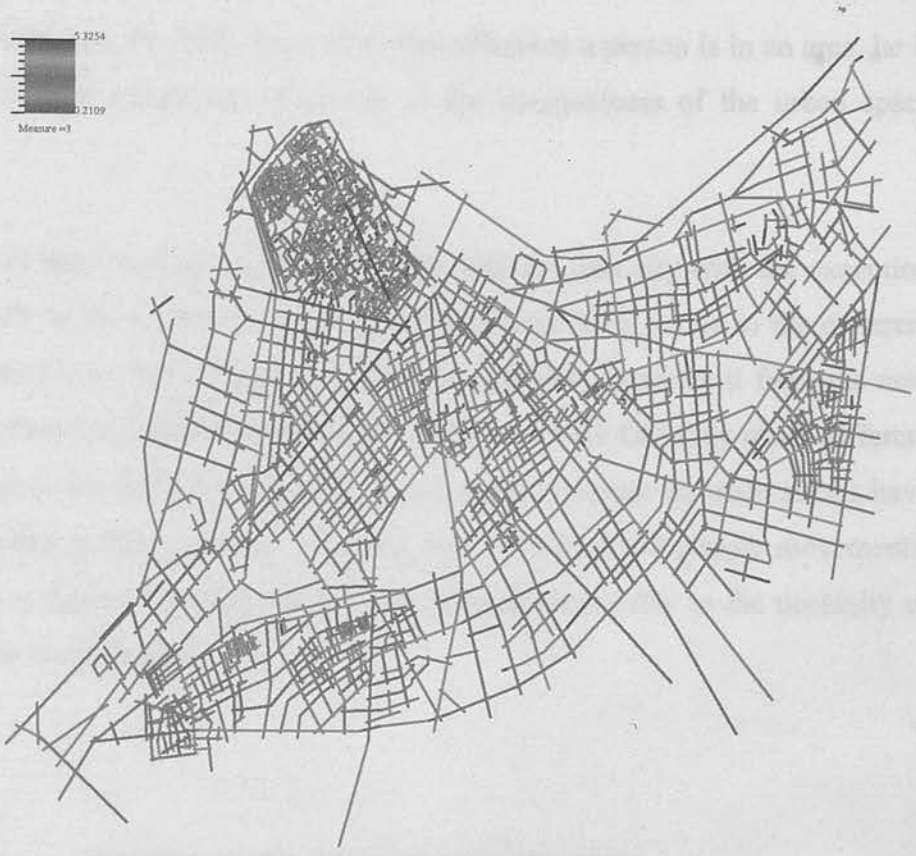


Figure: 7. 15 Axial map of Tripoli central area Integration radius (3) local integration. (Source: the author).

7.3.2 Tripoli Old City analysis

The axial maps show that the high integration area is where most activities happen and where there is a mix of uses such as markets, coffee shops, mosques and craft workshops. Most of the integrated areas of the Old City, however, are in the centre whereas the segregated areas are located within the residential zones where more privacy is needed. As regulated by Islamic planning legislation, these segregated residential areas are often very close to the integrated streets. By examining the axial maps of the Old City as an area separate from the new city, using the global integration (Figure: 7.17) and local integration (Figure: 7.18), it is clear that both axial maps share many integrated axial lines due to the high integration of the Old City as a whole. The most integrated street (shown in red) within the local integration map is located in the centre of the Old City where most of the shops and activities occur. This is followed by the streets in the east side, close to the harbour, where more craft workshops and jewellery shops are located. The global integration map shows more integration lines at the north-west edge of the city and at the southern edge. The Old City segregated areas are the private domains (green and blue) that are distributed in all parts of the city (see

Figure: 7.17). Moreover, the axial maps show that wherever a person is in an area, he is never far from a high integration street due to the compactness of the urban space structures.

The axial maps of the Old City show a weak link with the new city with the exception of few parts, such as the south and south-west boundaries. This is due to the coherent and unique urban fabric of the Old City and to its wall that separates it from the new city. The hierarchical structure of the network of streets in the Old City gives different integration values to the different streets. It could be observed that the main streets have high integration due to the existence of mixed uses, activities and people movements. Less integration is shown in streets within the residential areas due to the necessity of privacy and other social factors.

Figure: 7. 16 Tripoli Old City aerial view.

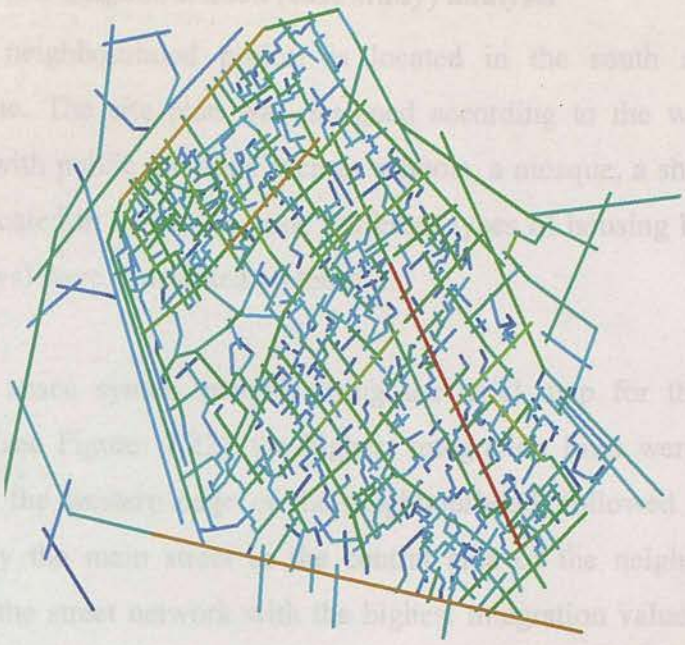
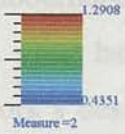


Figure: 7. 17 Old City axial map integration *n*.



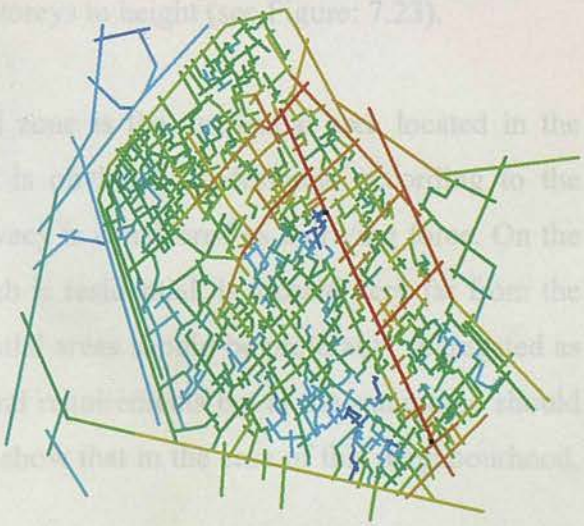


Figure: 7. 18 Tripoli Old City axial map integration (3)

7.3.3 *Hay Alakwakh* neighbourhood (case study) analysis

Hay Alakwakh neighbourhood project is located in the south edge of Tripoli's municipality zone. The site plan was designed according to the western concept of neighbourhood with public facilities such as schools, a mosque, a shopping centre and public offices located in its central area. Different types of housing blocks (four, eight and twelve storeys) were distributed on the site.

When applying space syntax analysis using the axial map for the *Hay Alakwakh* neighbourhood (see Figure: 7.22), the highest integration lines were respectively the street located at the western edge of the neighbourhood, followed by the north east street and finally the main street in the central area of the neighbourhood. In this neighbourhood, the street network with the highest integration value is not where one would have expected, in the central area but rather, it is on the western edge where a lot of high-rise blocks (twelve storeys) occur (see Figure: 7.22). The central area of the neighbourhood, where most services are located has less integration value due to the main street having little connection with the other streets which may suggest that the network's design is far from being successful. It is noticed that the most segregated streets are the cul-de-sacs on the edges of the neighbourhood particularly the eastern edge where the residential blocks are four storeys in height (see Figure: 7.23).

The results show that the most integrated zone is the residential area located in the western part of the neighbourhood. This is obviously undesirable according to the traditional way of life of people where privacy is considered as a driving force. On the other hand, the most segregated area, which is residential, is located very far from the integrated area. It is known that the residential areas should be preferably segregated as this responds better to the social and cultural requirements but at the same time should be close to the integrated core. The results show that in the case of this neighbourhood, its core has insignificant integration.

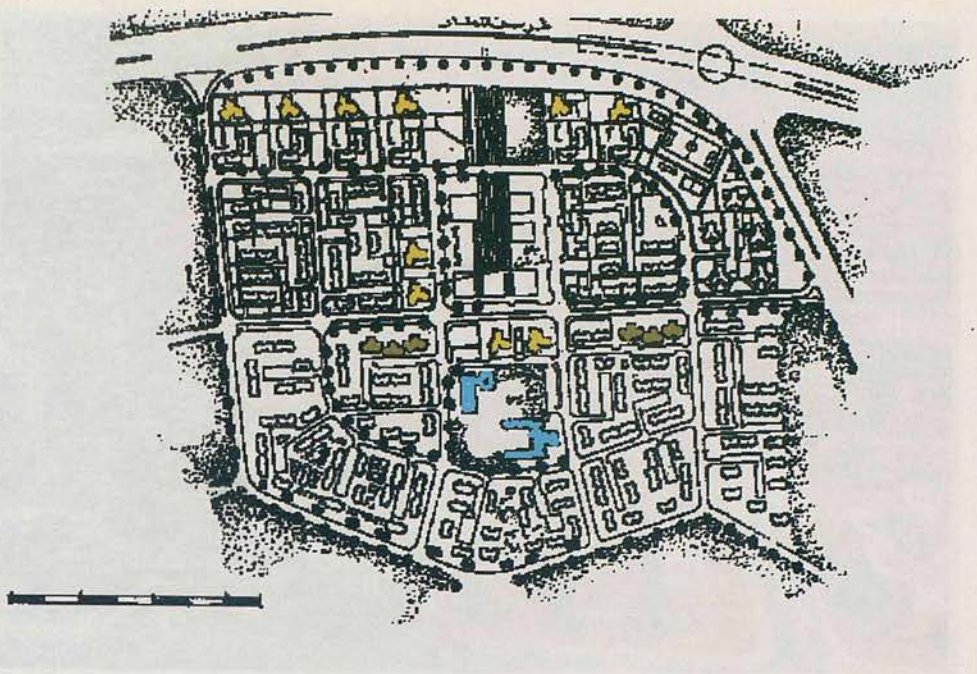


Figure: 7. 19 Site plan of the *Hay Alakwakh* neighbourhood (Source: Ministry of Housing documents).

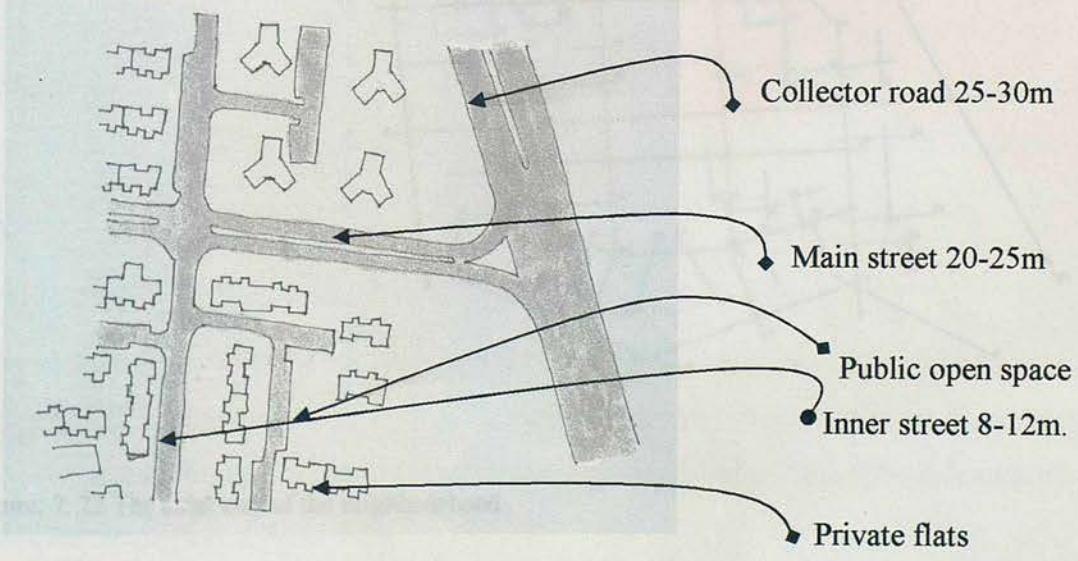


Figure: 7. 20 *Hay Alakwakh* neighbourhood hierarchy of outdoor spaces. (Source: the author).

Figure: 7. 21The main street of *Hay Alakwakh* neighbourhood which is in the right lower corner and the highest integrated street, which is in the left lower corner of the picture. (Source: El-Fortea: 249)

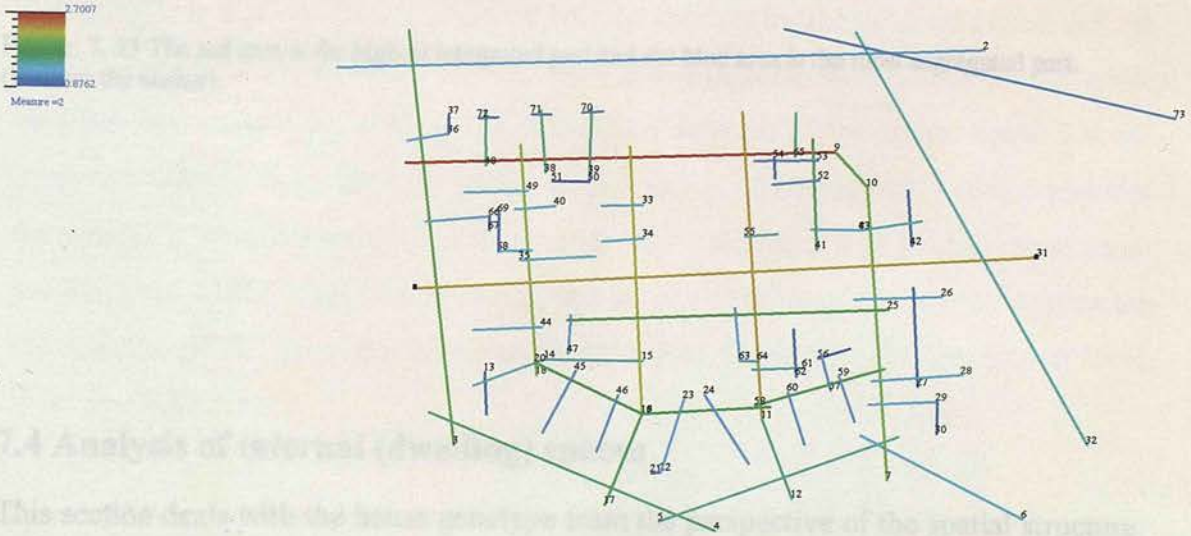


Figure: 7. 22 The axial map of the neighbourhood.

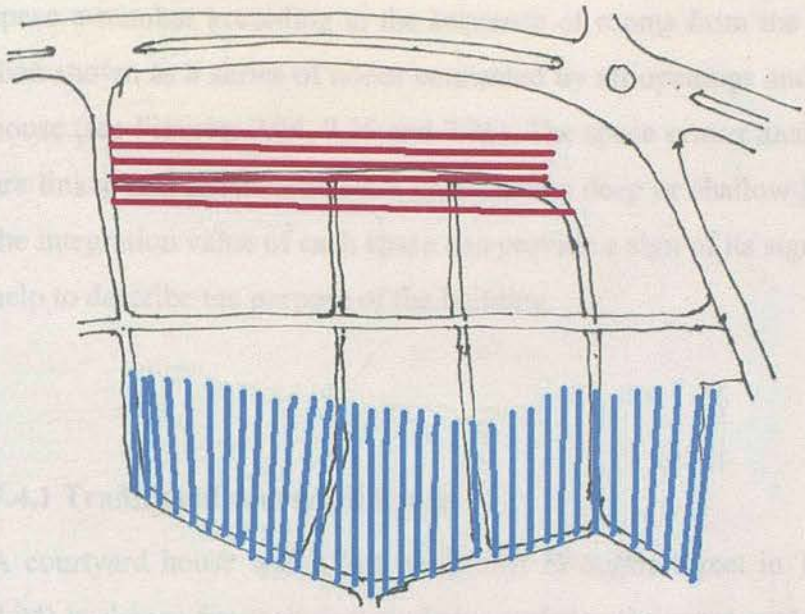


Figure: 7. 23 The red area is the highest integrated part and the blue area is the most segregated part. (Source: the author).

7.4 Analysis of internal (dwelling) spaces

This section deals with the house genotype from the perspective of the spatial structure of the traditional courtyard house and the modern Libyan flat. By applying space syntax analysis, it aims to answer to what extent does the spatial structure of both houses fit or constrain the people's way of life.

Figures 7.24, 7.25 and Table 7.1 show the plans, justified graphs and table for the Libyan traditional house in Tripoli Old City and in Figure 7.26 and Table 7.2 the modern public flat in the study area are presented to make a comparison of the spatial structure of the two dwellings in order to know how spaces are designed to fit or contravene the inhabitants' way of life.

In order to establish the hierarchy of spaces within the dwellings, the author gives each space a number according to the sequence of rooms from the entrance. The rooms are then shown as a series of nodes connected by all openings and passageways within the house (see Figures: 7.24, 7.25 and 7.26). The space syntax analysis looks at how spaces are linked and shows whether a space is at a deep or shallow level. However, knowing the integration value of each space can provide a sign of its significance to the users and help to describe the purpose of the building.

7.4.1 Traditional courtyard house

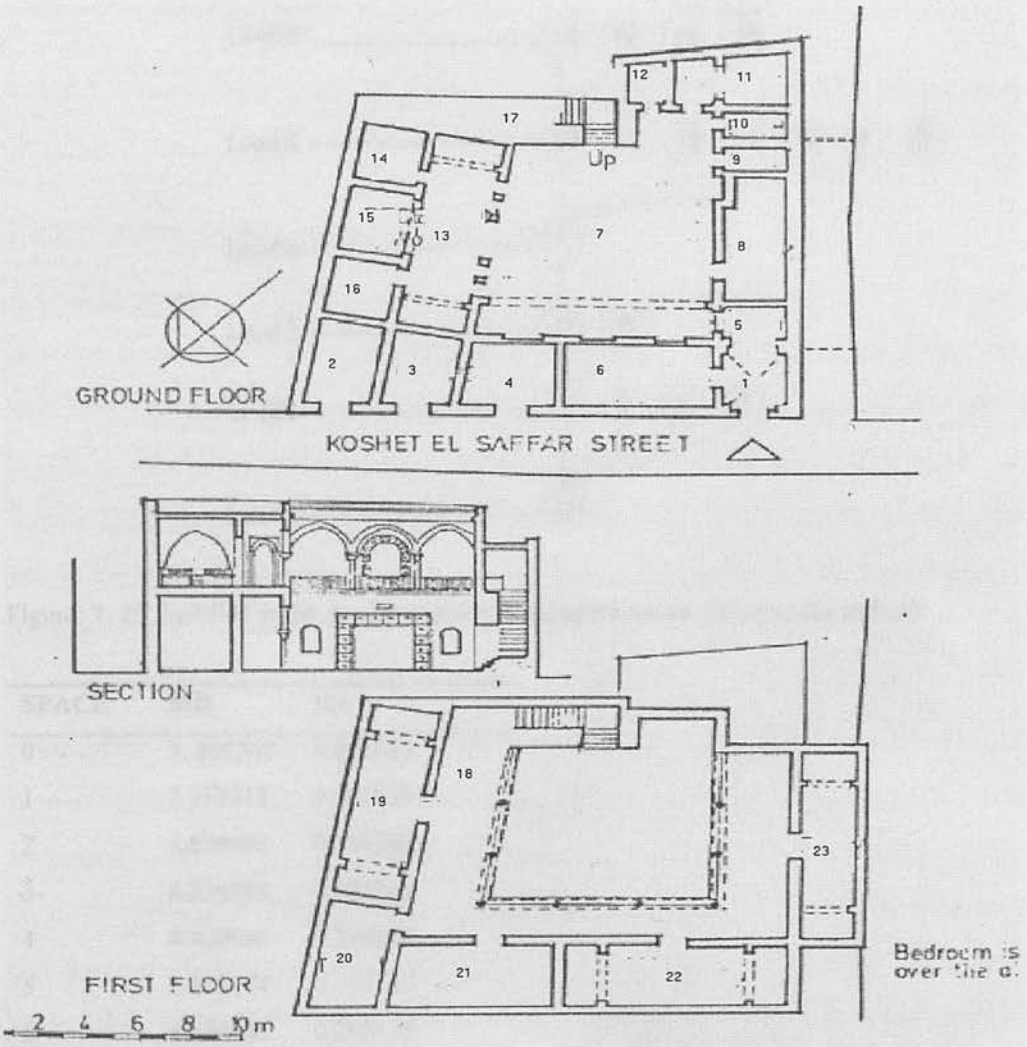
A courtyard house which lies on *Koshet El-Saffar* Street in Tripoli Old City (Figure: 7.24) is chosen for analytical study by applying the space syntax method using Netbox[7] software program. The results show that level 0 is the carrier space at the public area (street) outside the house. Level 1 the shallowest level, is for the outer courtyard and the shops. Level 2 is the reception men's room and *(Saqifah),* which controls the space between the semi-public, level 1, and the private domains of the house. Level 3 is the inner courtyard, usually used by female guests and family members. Level 4 includes the women's reception room, family room, family bathroom, WC, kitchen, store room and staircase. Level 5 includes three *Kabows* as an extension of the women's reception room on the ground floor and *Rewaq* on the first floor. Finally, level 6 the deepest level, is for five bedrooms.

From space syntax analysis the spatial structure of the house shows a logical hierarchy in the spaces reflecting the socio-cultural segregation between men and women for privacy. Moreover, the computational table shows that space 7, the inner courtyard has the highest level of integration and control. Spaces 1 and 5, the outer court and the *Saqifah* have the second and third-highest integration values. The three shops and guests' room, spaces 2- 4 and 6, have lower control figures (see Table 7.1).

Spaces and how they are connected to each other reflect the social structures, norms and religious rules of different users of these spaces. The traditional house has the (*Saqifah*) at a shallow level as a controlling space between the guests' room usually used by male

[7] - A computer program developed in University College of London by space syntax team.

guests, and the family area inner courtyard, which is used by female guests and family members, where most female activities take place, for securing privacy. The cultural rules make clear divisions between male and female. The spatial structure order limits the contact between the two areas. Furthermore, the bedrooms are at a deep level only where used by the family members for more privacy (see Figures: 7.24 and 7.25).



0- Carrier space.	6- Reception men room	12- Store room.	18- Rewaq.
1- Outer court.	7- Open court (courtyard).	13- Reception women room.	19- Master bedroom.
2- Shop.	8- Family room.	14- Kabow	20- Bedroom.
3- Shop.	9- WC.	15- Kabow.	21- Bedroom.
4- Shop.	10- Family bath.	16- Kabow.	22- Bedroom.
5- Saqifah.	11- .Kitchen	17- Staircase.	23- Bedroom.

Figure: 7. 24 Courtyard house in Tripoli Old City. (Source: the plans from Litim, 1985: 78).

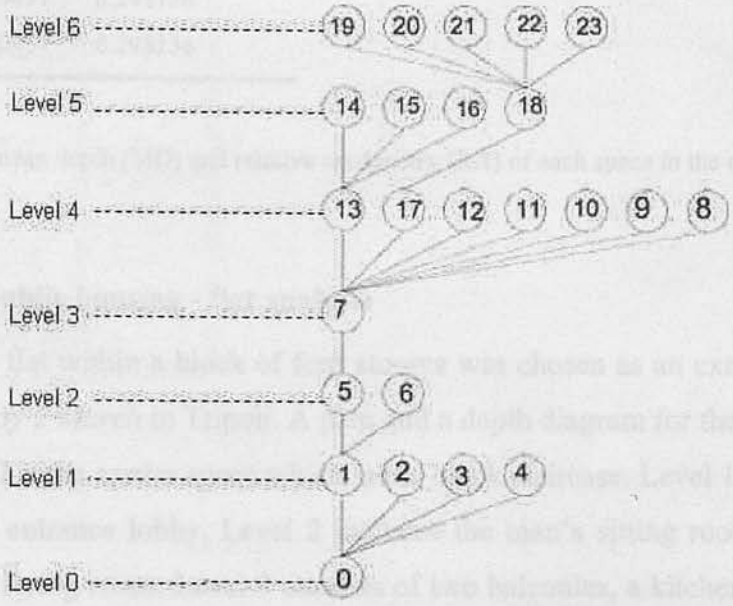


Figure: 7. 25 Justified graph for the traditional courtyard house. (Source: the author).

SPACE	MD	RA
0	3. 869565	0.207039
1	3.173913	0.207039
2	4.826086	0.394389
3	4.826086	0.394389
4	4.826086	0.394389
5	2.652174	0.157349
6	4.130437	0.298136
7	2.217391	0.115942
8	3.173913	0.207039
9	3.173913	0.207039
10	3.173913	0.207039
11	3.173913	0.207039
12	3.173913	0.207039
13	2.913043	0.182194
14	3.869565	0.273291
15	3.869565	0.273291
16	3.869565	0.273291
17	2.652174	0.157349

18	3.173913	0.207039
19	4.130437	0.298136
20	4.130437	0.298136
21	4.130437	0.298136
22	4.130437	0.298136
23	4.130437	0.298136

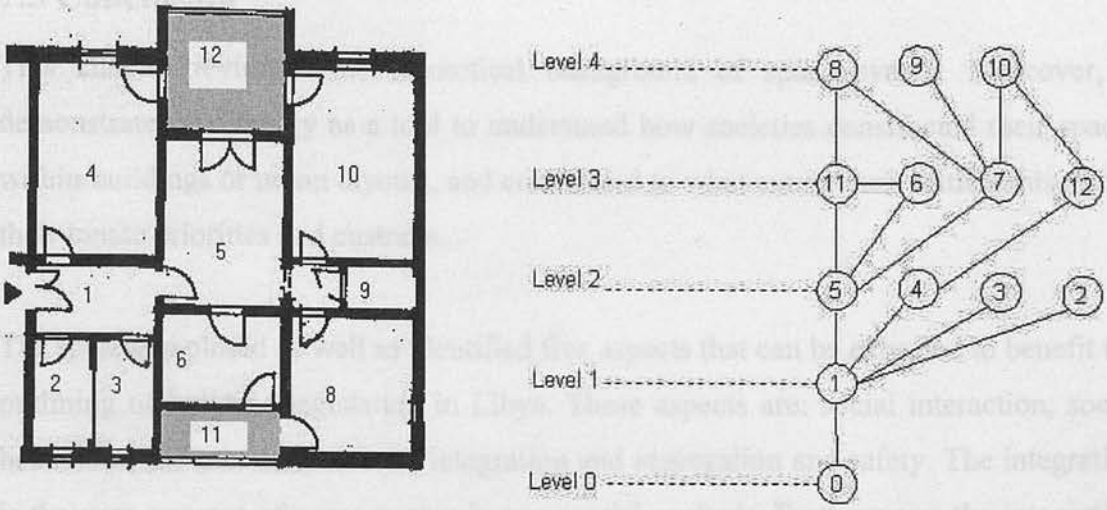
Table: 7. 1 Shows mean depth (MD) and relative asymmetry (RA) of each space in the courtyard house.

7.4.2 Modern public housing - flat analysis

A two bedroom flat within a block of four storeys was chosen as an example of public housing from *Hay 2 March* in Tripoli. A plan and a depth diagram for the flat present an analysis. Level 0 is the carrier space which is the block staircase. Level 1 the shallowest level, is for the entrance lobby. Level 2 includes the man's sitting room, guests WC, family bath and living room. Level 3 consists of two balconies, a kitchen and the small lobby between the bedrooms. Finally level 4 includes bedrooms and a small store (see Figure: 7.26).

From space syntax analysis, the spatial structure of the flat shows a defect of the logical hierarchy in the spaces, in particular the family bath is found in the shallow area, which is usually used by guests. Moreover, the balcony, space 12, there exists different access from the guests' room and family members use the same space which does not reflect the socio-cultural seclusion between men and women for privacy. The computational table (see Table: 7.2) shows that spaces 1 and 5, the entrance lobby and living room, have the highest level of integration. The store room, space 9 has the lowest integration value.

A summary of these findings shows that the designer has not been successful in creating a logical hierarchy in the spaces where there is mixed use of one area between guests and family members, such as the entrance lobby and the balcony, space 12. This leads to a loss at the control level which is the *Saqifah* in the courtyard house and to the loss of privacy upon which a high value is placed by Libyan society. But the designer succeeds in having the living room as the most highly integrated space.



0- Carrier space.
1- Lobby.
2- WC for guests.
3- Family bath.
4- Man's sitting room.
5- Living room.
6- Kitchen.
7- Small lobby
8- Bed room.
9- Store.
10- Bed room.
11- Balcony.
12- Balcony.

Figure: 7. 26 A plan of a flat in *Hay 2 March* Tripoli (case study 2) and its justified graph.
(Source: plan from Ministry of Housing and justified graph by the author).

SPACE	MD	RA
0	2.750000	0.350000
1	1.833333	0.166666
2	2.750000	0.350000
3	2.750000	0.350000
4	2.416666	0.283333
5	1.750000	0.150000
6	2.500000	0.300000
7	2.000000	0.200000
8	2.750000	0.350000
9	2.916666	0.383333
10	2.583333	0.316666
11	2.583333	0.283333
12	2.750000	0.350000

Table: 7. 2 Shows mean depth (MD) and relative asymmetry (RA) of each space in a modern flat from *Hay 2 March*.

7.5 Conclusion

This chapter reviewed the theoretical background of space syntax. Moreover, it demonstrated the theory as a tool to understand how societies constructed their spaces within buildings or urban layouts, and considered to what extent their settlements suited their innate priorities and customs.

The review explored as well as identified five aspects that can be expected to benefit the outlining of building legislation in Libya. These aspects are: social interaction, social behaviour, the mix of land uses, integration and segregation and safety. The integration is the core concept of space syntax in any spatial analysis. Furthermore, the integration values are directly related to the other four aspects. High integration plays an important role in increasing social interaction, social behaviour, the mix of land uses and safety in external spaces. On the other hand, segregation decreases them, particularly in modern Libyan housing.

The review then examined space syntax applications on two levels; external and internal spaces in Tripoli housing. The approach adopted was to compare three external urban conditions Tripoli Old City, the central area of Tripoli (new city) and *Hay Alakwakh* neighbourhood (case study 1) at the south edge of the Tripoli master plan. The results show that the spatial configuration of the Old City is more suited to Libyan families' way of life than that in the New City. The hierarchy of external spaces and street width in Tripoli Old City is a good resource for developing legislation.

At the internal level, it can be concluded that spatial analysis of the courtyard house is well organised to fulfil the customs of Libyan society. The results show that there is a logical hierarchy in the spaces reflecting the socio-cultural seclusion between men and women, enhanced by numerical results where the highest integration (2.217391) is the courtyard, the heart of the house, and the deepest, most segregated, (4.130437) is the private area, the bedrooms. On the other hand, in the modern flat, the findings show that there is no logical hierarchy in the organisation of the internal spaces, where the family bathroom mixed with the guests' area and the balconies the segregated spaces (2.750000) has a mixed use between family members and guests which in Libyan

custom is not allowed. The more segregated space, according to the analysis, is the store (2.916666) instead of the bedrooms.

Planning and building legislation in Libya could benefit from the results of the analysis of external and internal spaces by showing the designers and planners how to create spaces more suited to the Libyan people's way of life and customs.

Part Three, Empirical Work

Introduction to Part Three

Inductive framework (empirical work)

This part consists of two chapters and presents the empirical work (**inductive)** which aims to gain knowledge from observation, a practical questionnaire and interviews. The first chapter (Chapter Eight) deals with an open-ended survey. A qualitative questionnaire was distributed randomly among the households of the three case studies. The questionnaire was put to the respondents and selected key interviewees (architects, planners and decision makers) who deal with real housing problems, as well as discovering if other issues arose which were not addressed in the literature.

The second chapter (Chapter Nine) presented the research findings and examined three public housing case studies in Tripoli with the aim of demonstrating the practical application of the research judgment. The thesis findings are presented in this chapter as a framework, which is distilled from the chapters in Parts Two and Three by combining the results of these parts of the thesis, as a body of knowledge. The objectives of this chapter are to explore the reality of public housing in the chosen case studies, to discover if these dwellings impede some of the research framework, such as socio-cultural values of the inhabitants. To do so, the internal and external spaces are examined.

Chapter Eight

The Questionnaire and Interview Survey

Chapter Eight
Questionnaire and interviews analysis

8.1 Introduction

In the previous chapters the author identified some ways that could help to shape more suitable planning and building legislation in Libya. In this chapter, the aim is to explore the perceptions of the residents of Tripoli public housing in the context of the research questions which are: Why do the new housing patterns in Libya generate problems that make the inhabitants of the new built environments feel alienated from the traditional values? How does this force inhabitants to modify much of their new dwellings? To what extent does this happen due to the application of new housing legislation? To what extent do the modifications contravene planning and building legislation?

To answer these questions, a questionnaire was put to the respondents and selected key interviewees (architects, planners and decision makers) who deal with real housing problems, as well as to discover any other issues which were not addressed in the literature. The chapter describes in the following sections: the scope of the survey, the study area, obstacles and limitations, data collection methods, the survey design, reviewing the survey results and interviewees' results.

8.2 Scope of the survey

The survey aims to explore and examine people's perception of the evaluation of the public housing phenomenon in Tripoli, Libya and the implications of this evaluation for future planning and building legislation. To achieve this, a qualitative method was employed through an open-ended questionnaire and face-to-face, semi-structured interviews. The questions were classified under several sections (see 8.6 Survey design). Due to the aspect of the legislation which deals with internal and external spaces, these sections deal with dwelling units at neighbourhood and city level to elicit people's physical, psychological and socio-cultural needs. The purpose of having interviews with architects and planners is to see the public housing phenomenon and the relationship

between this phenomenon and planning and building legislation from different viewpoints and to have a broad perspective that could help to frame more suitable legislation.

8.3 The study area

Tripoli city was selected as the study area of the survey, for several reasons. These reasons are: Tripoli as the capital of the country, is inhabited by over one million people thus it offers a differentiation in people's income, education, background, it has the majority of public housing projects, indigenous and modern housing and all building and planning legislation has been applied to it from its early history to the present, as was mentioned in Chapter Four.

The survey sample was carried out with residents from three modern public housing estates located in different parts of the city these are: *Hay Al akwakh, Hay 2 March and Hay Kelat Jumma Enjela.* The researcher intends that the survey results will fulfil the objectives of the study and deal with valuable issues that can help to frame better planning and building legislation.

The survey was carried out during July and August 2002. The questionnaire was distributed among the respondents mainly at noon when most men would be in their flats and with the help of the author's friends, many of whom live in the housing selected for the case studies as otherwise, the author would have been seen as a stranger and distrusted. The total numbers of questionnaires completed were 52 out of 70 distributed in the three sites: 20 questionnaires in *Hay Alakwakh*, 25 in *Hay 2 March* and 25 in *Hay Kelat Jumma* (*Enjela*). Some of the questionnaires were not completed and some of them were lost by the respondents.

8.4 Obstacles and limitations

Time and financial limitations are considered important in most studies and are seen as the main obstacles that face any researcher. These limitations did not allow for involvement in the private housing sector. Furthermore, the author decided to address public housing because it has many problems and the designers did not give users a

chance to participate in the design of their flats whereas, this chance is given to the users of the private housing sector. Private housing can be the subject matter of further studies.

Some obstacles were raised during the distribution of the questionnaire, such as some respondents refused to return or complete the questionnaire because they saw it as a crises of the government policy; the distribution of the questionnaire took place only in the evening when the men had returned from their work, since the custom is not to let strangers enter a house when the men are absent, (in this situation more time was needed), as well as many women refused to involve in the questionnaire for customs and cultural reasons.

8.5 Data collection methods

To achieve the research objectives, the study adopted two main methods of data collection, an open-ended questionnaire and face-to-face, semi-structured interviews. In addition, the author's observations and his photographs of Tripoli public housing are used to illustrate some issues raised in the interviews. Qualitative research, based on an open-ended questionnaire is a standard tool in social science methodology (Strauss, 1987). The open-ended questionnaire has been employed to investigate the observation of events, norms, values, action etc. from the perspective of people who are involved in any study, as 'seeing through the eyes of people' (Bryman, 1995) and the data that emerges can be connected to literature and theories and 'grounded in reality' (Denscombe, 1998), as well as discovering things about multifaceted issues such as housing. Based on a qualitative approach, the questionnaire was distributed mainly among the residents on the estates selected for the three case studies. For this purpose, a 'purposive sampling' technique was used in the survey so that the study would gain the most valuable data from specific people, since the residents know the housing situation better than anyone else. The semi-structured, face-to-face interview was employed in this study to explore the attitudes, expectations and experiences of 'elite' architects and planners as described below (8.6 Survey design).

8.6 Survey design

The questionnaire was designed to cover all aspects of housing and to be clear and easily understood by respondents who were encouraged to answer the research questions as well as they could. The questionnaire was written in the Arabic language (the mother tongue of Libyan people) and was divided into four parts: part (A), personal information which consisted of 5 questions; part (B), 17 questions related to the dwelling unit; part (C), 13 questions related to the neighbourhood; and part (D), 6 questions related to the city. The semi-structured, face-to-face interviews, which followed the four-part questionnaire, were divided into two sections. Section one, consisted of face-to-face interviews with four architects and planners who work at the Ministry of Housing or Municipality. They are key decision makers who have responsibility for implementing planning and building legislation and they also deal with housing problems. They give another perspective and provide more detailed information about housing and legislation from the viewpoint of professional people.

Section two deals with four architects and planners who have private offices that deal with housing (design and planning) and where they usually give their advice and have consultations with people. The interviewers were given an open-ended questionnaire consisting of seven questions and asked to give their opinion, mainly about the changes that happen in public housing and the role of planning and building legislation on housing.

8.7 PART A: Personal Information

Age structure:

Table 8.1 below shows the respondents grouped into 5 age categories. The first group is from 10 to 20 years old; the second, from 21 to 30 years old; the third, from 31 to 40 years old; the fourth, from 41 to 50 years old; and the fifth group over 50 years old. The variety of the ages of the respondents helps to elicit a range of viewpoints as to how they see their flats and their neighbourhoods. The most representative ages were from 31 to 50 year old (66%) (see Table 8.1 and Figure 8.1).

Age	10 -20	21 – 30	31 - 40	41 – 50	Over 50	Total
Number	5	6	18	16	7	52
Percentage	10%	11%	35%	31%	13%	100%

Table: 8. 1 Age groups.

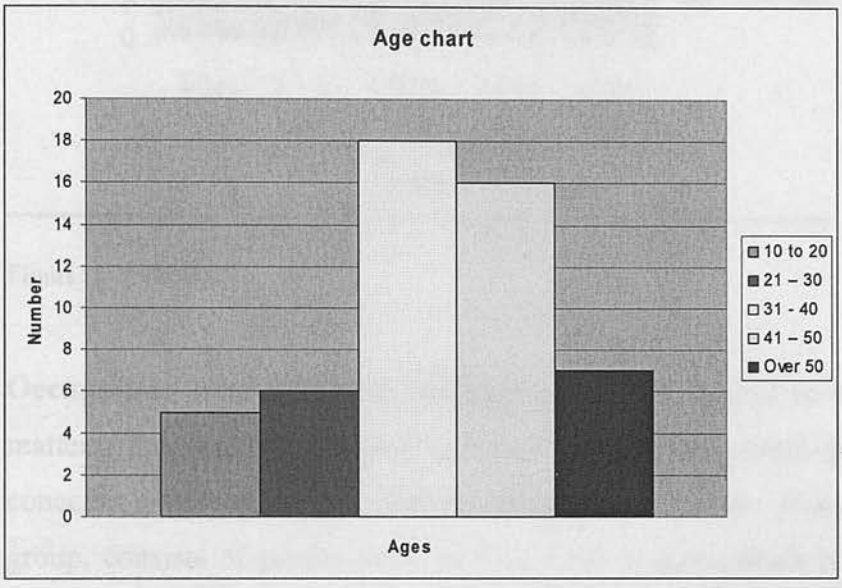


Figure: 8. 1 Age groups.

Gender: The sex distribution in this survey was 38 male (73%) and 14 female (27%) (see Table 8.2 and Figure 8.2). This apparent imbalance can be attributed to the nature of Libyan society which holds that females should not talk to strangers but only to family members and close relatives. This belief is most strongly held by older females who adhere more to traditional customs and cultural norms. These days such modes of traditional behaviour can be observed less in younger females due to the cultural changes that have shifted women's domain from the home, to work and school (Al-Kodmany, 1999: 286). This trend is reflected in Table 8.2, which shows that only one woman between the ages of 41- 50 participated in the research, as opposed to 22 men.

Age	10 - 20	21 - 30	31 - 40	41 - 50	Over 50	Total	Percentage
Male	3	3	10	15	7	38	73.08%
Female	2	3	8	1	0	14	26.92%

Table: 8. 2 Gender: age.

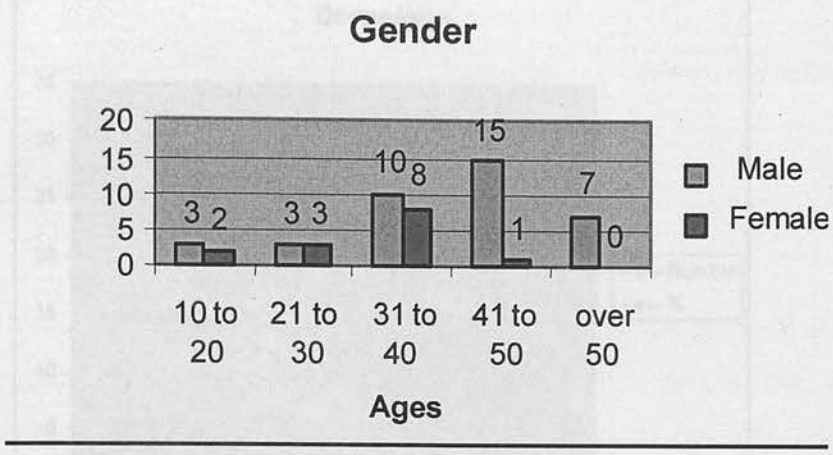


Figure: 8. 2 Gender.

Occupation: Many different occupations are represented in the results. To simplify matters, the occupations were grouped into seven general groups. The first group concerns people who are full-time students or who are younger people; the second group, consists of people who are employed as government officers; the third group, those in military service; the fourth group consists of university staff; the fifth, self-employed people; the sixth group consists of housewives and the last group, retired people. Table 8.3 and Figure 8.3 show the number and percentage of these groups.

Work	Student	Officer	Soldier	Uni/Staff	Self/Empl	H/Wife	Retired	Total
Number	7	16	12	7	5	3	2	52
%	13	31	23	13	10	6	4	100

Table: 8. 3 Occupation.

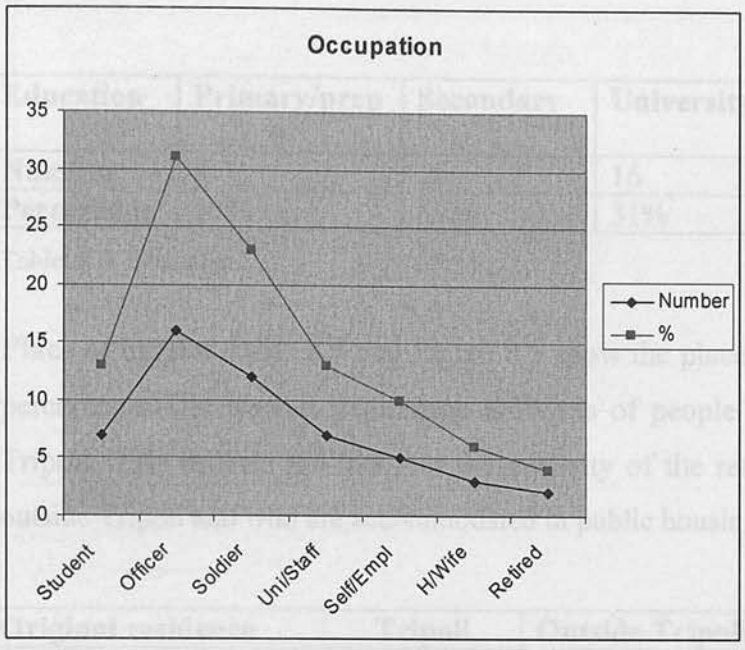


Figure: 8. 3 Occupation.

Education: The education system in Libya includes 6 years at primary school, 3 years at preparatory school and 3 years at secondary school. Table 8.4 and Figure 8.4 show the different education stages of respondents, categorised into four main groups. The first group is those who have only primary and a preparatory education. The second, those who have a secondary education. The third group consists of those who have a university or college education and the last group, those who have a postgraduate academic qualification, such as a masters degree or PhD. In case study 3, Alfateh University in Tripoli had been allocated a number of housing blocks in *Kelat Jumma* and the university had made them available for rent to their staff.

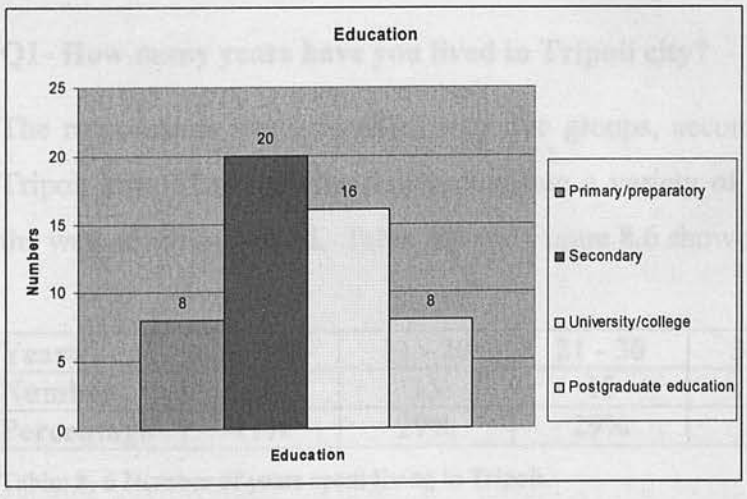


Figure: 8. 4 Education.

Education	Primary/prep	Secondary	University/college	Postgraduate education	Total
Number	8	20	16	8	52
Percentage	15%	39%	31%	15%	100%

Table: 8. 4 Education.

Place of origin: Table 8.5 and Figure 8.5 show the place of origin, both in number and percentage. The highest percentage (73%) is of people who have come from outside Tripoli. This reflects the fact that the majority of the respondents are immigrants from outside Tripoli and who are accommodated in public housing.

Original residence	Tripoli	Outside Tripoli	Outside Libya	Total
Number	14	37	1	52
Percentage	27%	71%	2%	100%

Table: 8. 5 Place of origin.

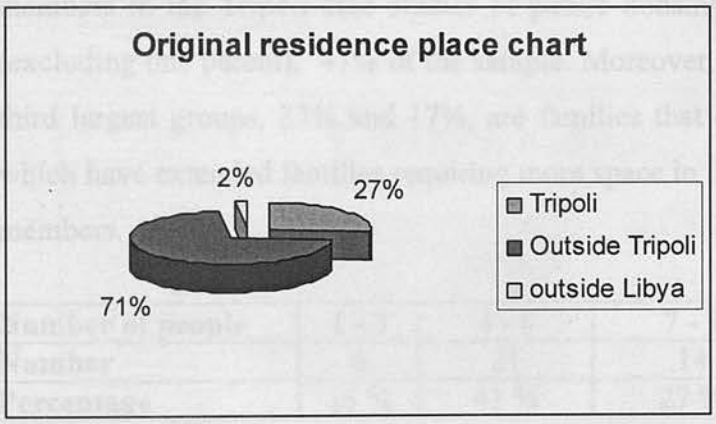


Figure: 8. 5 Place of origin.

Q1- How many years have you lived in Tripoli city?

The respondents were classified into five groups, according to their length of stay in Tripoli city. These differentiations indicate a variety of perceptions and adaptation to the way of life in Tripoli. Table 8:6 and Figure 8.6 show the classification.

Years	0 - 10	11 - 20	21 - 30	31 - 40	Over 40	Total
Number	9	15	15	11	2	52
Percentage	17%	29%	29%	21%	4%	100%

Table: 8. 6 Number of years spent living in Tripoli.

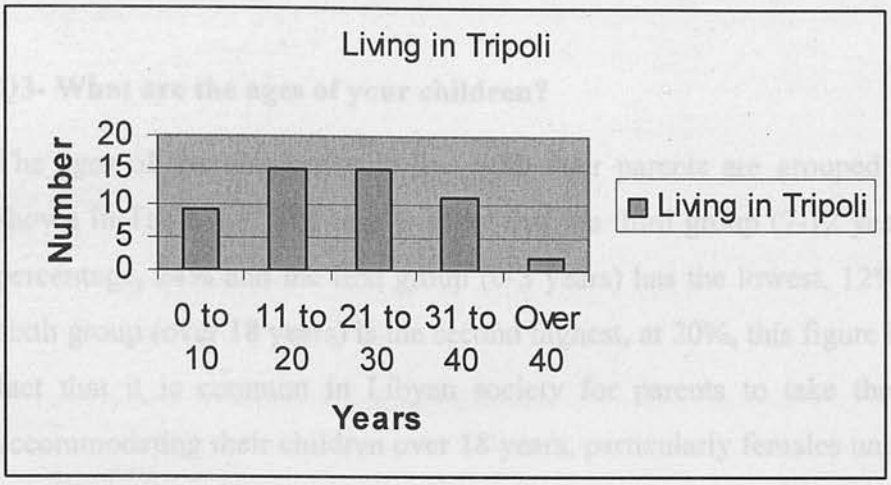


Figure: 8. 6 Number of years spent living in Tripoli.

Q2- How many people live with you in your flat?

Table: 8.7 below demonstrates and classifies into four groups the number of family members who live in the same flat. The results show that the largest group of family members in the Tripoli case studies of public housing, consists of four to six people (excluding one parent), 41% of the sample. Moreover, the results show the second and third largest groups, 27% and 17%, are families that can be characterised as large or which have extended families requiring more space in their flats to accommodate all the members.

Number of people	1 - 3	4 - 6	7 - 9	10 or more	Total
Number	8	21	14	9	52
Percentage	15 %	41 %	27 %	17 %	100%

Table: 8. 7 Numbers of people living in the flat.

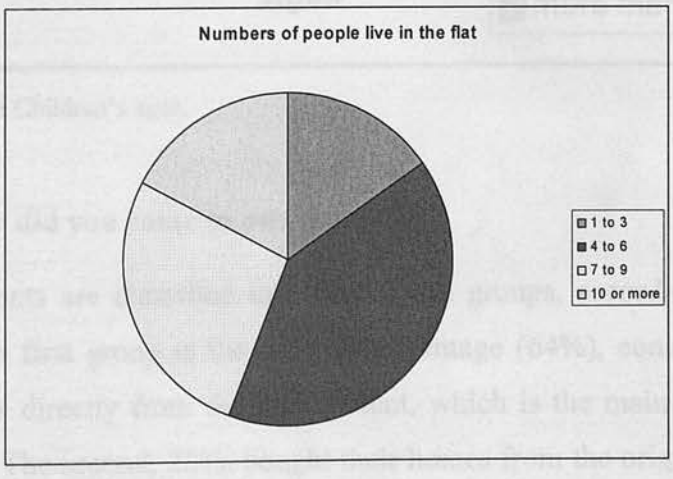


Figure: 8. 7 Numbers of people living in the flat.

Q3- What are the ages of your children?

The ages of the children who live with their parents are grouped into six groups as shown in Table 8.8. The results show that the third group (7-12 years) has the highest percentage, 24% and the first group (0-3 years) has the lowest, 12%. Furthermore, the sixth group (over 18 years) is the second highest, at 20%, this figure is illustrative of the fact that it is common in Libyan society for parents to take the responsibility for accommodating their children over 18 years, particularly females until they get married. The differentiation in age groups and their varying needs, have to be met by making available a range of facilities and in the use of space inside and outside their flats, such as the number of bedrooms, playgrounds, schools, etc.

Ages	0 - 3	4 - 6	7 - 12	13 – 15	16 - 18	Over 18	Total
Number	26	36	53	27	31	44	217
Percentage	12 %	17 %	24 %	13 %	14 %	20 %	100%

Table: 8. 8 Children's ages.

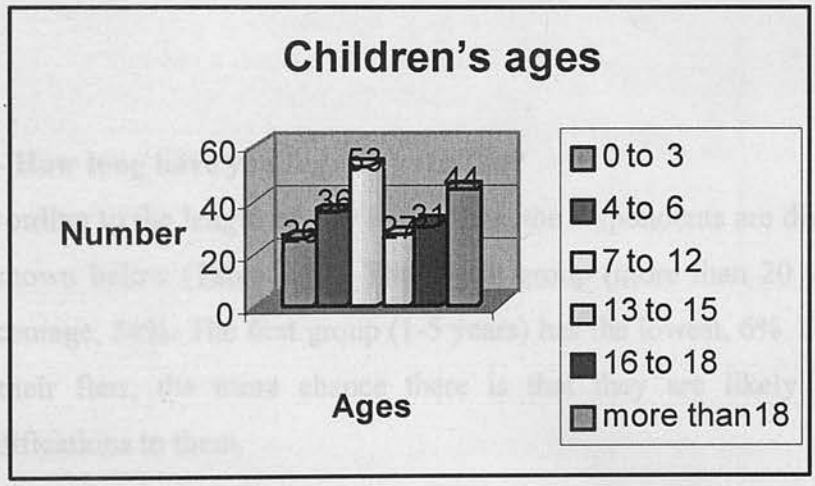


Figure: 8. 8 Children's ages.

Q4- How did you come to own your flat?

Respondents are classified into three main groups, according to how they own their flats. The first group is the highest percentage (64%), consisting of people who own their flats directly from the government, which is the main provider of Libyan public housing. The second, 23%, bought their homes from the original owner or from another person who had bought the flat from the original owner. Then the last group consists of

people who do not own the flat but live in it with their parents (see Table 8.9 and Figure 8.9).

Ownership	From gov't	Bought	Father's flat	Total
Number	33	12	7	52
Percentage	64 %	23 %	13 %	100%

Table: 8. 9 The flat owner's source.

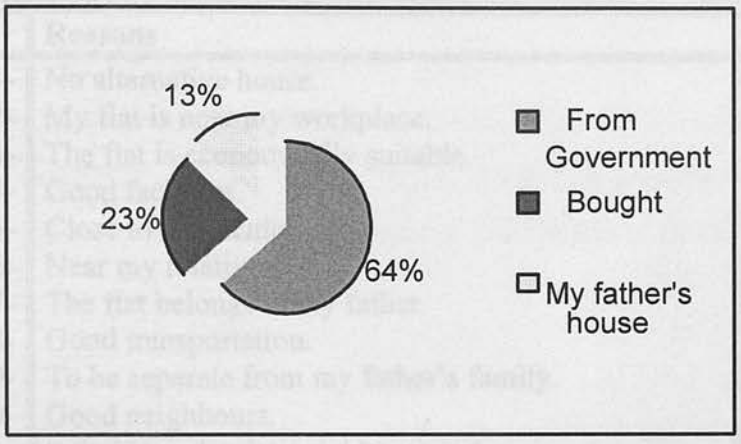


Figure: 8. 9 The flat owner's source.

Q5- How long have you been in your flat?

According to the length of stay in the flats, the respondents are divided into five groups as shown below (Table 8.10). The fourth group (more than 20 years) has the highest percentage, 54%. The first group (1-5 years) has the lowest, 6%. The longer people stay in their flats, the more chance there is that they are likely to make changes or modifications to them.

Years	1 - 5	6 -10	11 - 15	16 - 20	More than 20	Total
Number	3	6	8	7	28	52
Percentage	6 %	12 %	15 %	13 %	54 %	100%

Table: 8. 10 Length of stay in the flat.

8.8 PART B: Information about the dwelling unit

Q6- Mention 3 reasons that motivated you to choose your flat.

This question asks the residents to give the reasons that determined their choice of flat, in order to discover how they evaluated them. To ground this answer in Libyan building and planning legislation, the relationship between the residents and their flats is highlighted. The more prominent reasons given are then discussed.

No	Reasons	Freq	Percentage
1-	No alternative house.	21	18.26%
2-	My flat is near my workplace.	15	13.76%
3-	The flat is economically suitable.	13	11.93%
4-	Good facilities.	8	7.34%
5-	Close to city centre.	8	7.34%
6-	Near my relatives.	7	6.43%
7-	The flat belongs to my father.	6	5.50%
8-	Good transportation.	5	4.59%
9-	To be separate from my father's family.	5	4.59%
10-	Good neighbours.	5	4.59%
11-	Suitable and quiet neighbourhood.	4	3.67%
12-	The government allocated it to me.	3	2.75%
13-	The flat is at ground-floor level.	3	2.75%
14-	The flat has a court and a garage.	3	2.75%
15-	The flat is larger than my old house.	2	1.83%
16-	The flat is compensation for my previous house.	1	0.93%
	Total	109	100%

Table: 8. 11 Reasons why the interviewees chose their flats.

Table 8.11 shows that having 'No alternative house' is the main reason for choosing the flat (20%) but this is a negative factor, as it does not reflect a positive desire that binds the residents to that particular home. This means that the flats referred to in this response only satisfy the most contingent needs of the residents and it also implies (but does not state) that if they had a good alternative, they would move. The effect on living patterns is that flats are used in a transient way.

The highest positive reason that motivated the respondents to choose their flats is the proximity to the workplace (13.76%). On the one hand, the proximity leads to less travel by car to the workplace, less time taken for this and less pollution caused. This

reduces stress on people, reducing car use, and increases social activities and interactions. On the other hand, air pollution has direct and indirect results on public health and the economy. For example, the United Nations Development Programme (1996) points out that "*Air pollution in urban areas has a direct effect on man's health and increases the risk of lung diseases. It also has an indirect effect on economy because of loss of productivity resulting from ill health*" (quoted in Khattab& Al-Mohaisen, 2000).

If a workplace is too far from the house, transportation would have presented another financial burden for residents (Khattab, and Al-Mohaisena, 2000:29). Successful neighbourhoods that provide workplaces for their residents therefore increase people's motivation to settle there and achieve sustainability goals (see Chapter Six for more detail).

Q7 – Would you consider moving from your flat? Mention (3) reasons why.

Yes/No	Freq	Reasons	Freq	Total
Yes	41	The flat is too small for the members of my family.	29	
		Decline of facilities.	13	
		The flat is unsuitable for social and private life.	9	
		The neighbourhood and the flat are not healthy.	9	
		The flat is on a high floor and the lift does not work.	7	
		Lack of children's playing area.	7	
		The flat is far from my workplace.	5	
		The quality of the neighbourhood.	5	
		The flat is far from the city centre.	4	
		The area is noisy.	4	
		The flat feels uncomfortable.	4	
		Lack of future extension.	4	
		The flat has become old.	3	
		Lack of leisure spaces.	3	
		I wish to have a flat on the ground floor.	3	
		The spaces in the flat and neighbourhood are unsuitable.	3	
		My income has improved.	2	
		I have problems with my neighbours.	1	105

No	11	I have no ability to buy another house. The flat is near to many facilities. The flat feels comfortable. The flat is not far from my workplace. I have relatives near me. I have good relations with neighbours. Lack of a good alternative. Good transportation.	6 4 3 3 1 1 1 1	20
Total	52			125

Table: 8. 12 Respondents' reasons to move or stay in their flats.

Table: 8.12 demonstrates that there are several reasons that would motivate inhabitants to move from their flats. The main reason (29) is the lack of indoor space to accommodate family members, particularly so for large families, where the biggest flats have only three bedrooms. The average Libyan family size is 6.4 people (Abdalla, 1998:43 and Table 8.7). Islamic teaching's ordinance is to segregate males from females in the bedrooms. Having many people living in a small place causes overcrowding and a lack of privacy, this has a psychological impact on family members (Hassan, 1980). Overcrowding leads to a lack of psychological safety needs which is one of the basic needs in Maslow's model (see Chapter Five). Moreover, as Hassan points out, higher internal density (crowding) is perceived as the factor which forces children out of their flats to play where parental surveillance and control over children declines, leading to juvenile delinquency (Hassan, 1980: 34). For example, for people who live in a high-rise block of flats, such as in the Tripoli Case study 1 (*Hay Alakwakh*), in twelve-storey blocks, parental supervision would not be possible. Planning and building legislation in Libya should address the indoor space issue, particularly when designing housing to provide enough spaces for different family sizes and for cultural, hygiene and safety purposes.

Respondents mentioned that children's playing area is an important place whether it is indoor or outdoor, and the lack of such space could be a significant reason which motivated residents to move from their flats and neighbourhood. The indoor play area for younger children, such as the living room or elsewhere, in the flat is safer and more secure because mothers could keep an eye on their children, not let them get involved in fights or mix with bad company. Children's play areas are not the only places for play but to exercise their bodies and learn from play is an important, basic human need and

one which encourages cognitive development and reinforces self-confidence (see Chapter Five). The lack of playing areas, indoor and outdoor, is the push factor for children to play in the streets which makes them vulnerable to many dangers. Many public houses in Tripoli suffer from a lack of play areas. Planning and building legislation in Libya has not studied the importance of this issue in outdoor and indoor spaces.

As shown in Table 8.12, privacy in the flats was an important issue for the respondents. The majority of the respondents concentrated on privacy because it is a part of Libyan social and cultural custom and has its roots in Islamic teachings. These teachings comprise strong forces affecting the behaviour and way of life of the Libyan people and influence their built environment, especially the layout of neighbourhoods and the design of the dwelling unit.

Planning and building legislation is a suitable tool for encouraging and ensuring privacy. Respondents mentioned that their flats were unsuitable for socialising and privacy. The planning and design in contemporary Tripoli public housing pays little attention to the importance of privacy as an important dimension. The respondents said they miss the scope for values such as privacy to be respected in their traditional housing. However, this creates a powerful influence on inhabitants to move or remain in their flats as is shown in Table 8.12. In order to meet these needs, people have frequently made informal changes to their flats by adding or removing walls to the rooms and balconies. They are forced to adapt to building and planning legislation, which has made a major contribution to the design and layout of these flats. This section illustrates the meaning of privacy from different perspectives and why it is important for people.

The meaning of privacy:

Many studies consider the meaning of privacy. The following shows some of them and the aim is to illustrate how different people define privacy. Al-Kodmany (1999) defines residential visual privacy as "*the ability to conduct the everyday activities of the home without being observed and without fear of being observed by those outside the home (i.e. neighbours and passers-by)*" (Al- Kodmany, 1999: 283).

The demands for internal privacy are likely to be greatest in cases of acute overcrowding, where families have little choice but to live 'on top' of one another, and occupy bunk beds, and also in families where a different but conflicting range of interests results in the need for more segregated room space. In Libya it is common for young people over the age of 18 to live with their families in the same flat until they are married and then to move into their own flat, particularly today where families are less extended due to rapid changes in Libyan society. This situation has led to overcrowding, particularly when the flats have fewer rooms to allow for the privacy of each family member. In the Holy Quran privacy between members of the family is clearly shown as:

> *O ye who believe! Let those whom your right hands possess, and the (children) among you who have not come of age ask your permission (before they come into your presence), on three occasions: before morning prayer; while you take off your clothes for the noonday heat; and after the late-night prayer. These are your three times of undress. Outside those times it is not wrong for you or for them to move about attending to each other, thus does God make clear the signs to you, for God IS full of knowledge and wisdom. But when the children among you come of age, let them (also) ask for permission, as do those senior to them (in age), thus does God make clear the signs to you : for God IS full of knowledge and wisdom* (Surat. xxiv.58-60.).

Many western studies discuss privacy, like Altman who provides a broad definition of privacy as a "... selective control of access of the self or one's group" (Altman, 1975: 18). Lang states that: "Definitions of privacy have one thing in common; they stress that it has to do with the ability of individuals or groups to control their visual, auditory and olfactory interactions with others" (Lang, 1987: 145). Moreover, the meaning of privacy as illustrated in the book *Privacy & Courtyard Housing* says: Freedom to live one's own life (together with that of one's family) without outside interference or intrusion, freedom from seeing or being seen by neighbours and passers-by when in the house or garden, and freedom from disturbance by noise (Architecture Research Unit, University of Edinburgh, 1966).

Privacy from a language perspective:

Sciama demonstrated that privacy drives from the Latin verb *privare* (adjective from *privus,* later *privates*). She observes that the most important, and socially revealing, aspect of the word's development in English is the formation of the noun '*privacy*' (quoted in El Guindi 1999: 81). She argues that the term '*privacy*' in English had become widely used in literary contexts by the sixteenth century, finally falling into common usage.

The term 'privacy' in western usage is linked to the notion of individualism and individual rights to property, moreover it means '*personal*', '*secluded*', '*secrecy*', and '*solitary*', while the term privacy in Arabic is concerned with two key issues related to women and the family and does not connote the '*personal*' the '*secret*' or the '*individuated space*'. The privacy is reflected in dress, space, architecture and proxemic behavior (El Guindi 1999: 82).

Sciama further defines privacy in the western sense as "the need for individuals, families or other social groups, to separate themselves from others at various times, for certain well-defined activities" (quoted in El Guindi 1999:87).

The influence of privacy on the built environment:

In Tripoli Old Town as in traditional Muslim cities, privacy is achieved through unwritten regulations and social agreement. People in the old town order their physical environment in accordance with their societal regulations and cultural needs that are a combination of their religious faith and local traditions. Division between the sexes in Islamic culture plays a central role in the organising of space. According to Chowdury (1993) "*a significant of the Islamic culture is the segregation of women from male members of society other than next of kin. This influences the female pattern of activity and movement, both in the home and public areas. The organisation of space in the Muslim home reflects this particular pattern*". The traditional house forms are the inward-looking *courtyard house*s which support the family and social functions and fulfil the need for privacy, as well as meeting all climatic conditions.

The separation of women from men, especially in seating areas, divides the house into two areas where males and females are received separately. Traditional public areas in

Libya are characterised by the absence of women. Libyan women usually do not visit the mosque, public gatherings, bazaars or coffeehouses. When they participate in public congregations or institutions, they often will have special facilities, like separate, screened-off spaces provided for their use. They go out into the streets only when necessary and even then, with fathers or brothers and the protection of *frashia*[8] the veil (see Figure 8.10).

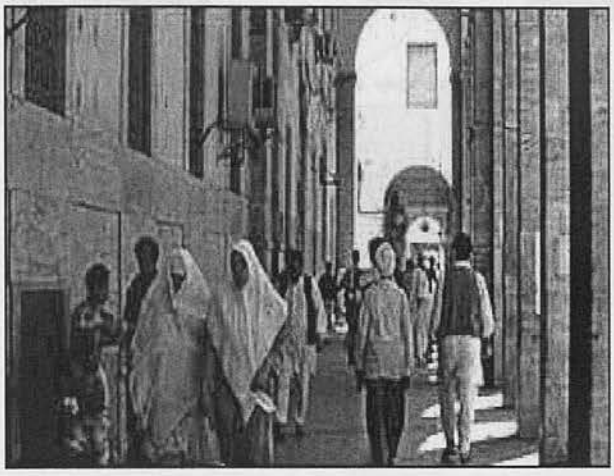


Figure: 8. 10 Libyan women wearing *frashia* veil.

Moreover, privacy is determined by the form of the traditional houses in Libya:

- The division of the house into a public (guests) and private (family) section;
- Minimal external windows which are either small in size, high above the ground or screened with *Mushrabiya* (screen) that allows women to look out without being seen (see Figure: 8.18).
- High roof parapets to allow private use of roof space.
- Indirect entrances to the houses.
- All houses have the same height along the street.

Privacy is a value deeply rooted in Libyan culture therefore it has to be addressed as such in legislation.

[8] - *Frashia* in Libya, Tunisia and Algeria is the white cloth usually used to cover the total body of the woman.

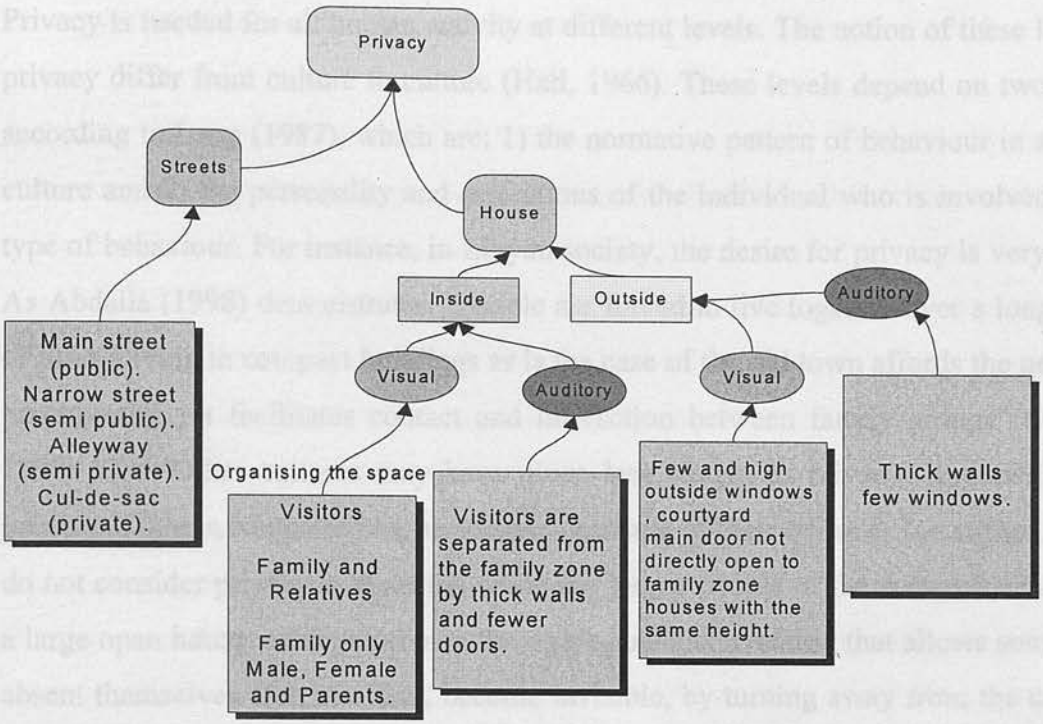


Figure: 8. 11 Levels of privacy in Libyan traditional housing. (Source: the author.)

Status of privacy:

The state of privacy depends on the relationship between achieved and desired results. This relationship has an extensive influence on the behaviour of people. It is important for designers and planners to know these levels to generate suitable housing for people. In discussing desired and achieved privacy, Altman (1975) distinguishes three cases:

- *Achieved = desired*: if the achieved privacy is equal to the desired privacy, an optimum state of privacy exists, resulting in psychological comfort;
- *Achieved < desired*: if the achieved privacy is less than the desired privacy, a sense of invasion of privacy results; a person has more interaction than s/he wants and intended to achieve; the person feels 'crowded';
- *Achieved > desired*: if achieved privacy is more than desired privacy, the result is a sense of loneliness and social isolation (in Al-Kodmany, 1999: 288).

How privacy differs in cultures:

Privacy is needed for all human activity at different levels. The notion of these levels of privacy differ from culture to culture (Hall, 1966). These levels depend on two factors according to Lang (1987), which are: 1) the normative pattern of behaviour in a certain culture and 2) the personality and aspirations of the individual who is involved in that type of behaviour. For instance, in Libyan society, the desire for privacy is very strong. As Abdalla (1998) demonstrates: "people are forced to live together over a long period of time. Living in compact buildings as is the case of the old town affords the necessary privacy and yet facilitates contact and interaction between family groups" (Abdalla, 1998: 123). Other cultures may have given less weight to privacy. Rapoport (1969) points out that in Nepalese Sherpa societies because of their attitudes toward sex, people do not consider privacy as essential while the Yagua people of the Amazon who live in a large open house, achieve privacy through a social convention that allows someone to absent themselves and, in effect, become invisible, by turning away from the centre of the house. However, the attitudes of traditional Japanese are completely different with regard to privacy and modesty (Rapoport quoted in Abdalla, 1998:123).

Future extension:

Some respondents (4) mentioned that there was little potential for future extension in their flats. The design of the apartments does not take into consideration the extensions which are likely to be needed during a family's life cycle. Due to the prefabricated walls and columnar construction system which was adopted for blocks in case study 2, *Hay 2 March* and case study 3, *Khilat Jumma* (*Enjela*), residents face difficulty in making internal and external redesign modifications to the spaces, particularly those flats which are above the ground floor. The main reasons for future extension are, an increase in family members, spaces such as the kitchen, living room and guest room becoming too small to accommodate the activities that occur in those spaces and a lack of enough separation between family members and guests' areas. The future extension of the flats could be achieved through having sliding interior walls, which would offer flexibility to modify the space to meet different residents' needs, by moving the walls to increase the space or adding them to create a new space. In traditional houses in Tripoli, people use the roof and courtyard for future extension, such as adding a new bedroom for married

sons. Planning and building legislation in Libya limits any future extension by applying zoning codes, site coverage limits and floor space ratios (see Chapter Four).

Some interviewees (4) mentioned that their apartments are far from the city centre and they evaluate their neighbourhoods as segregated from the city centre, such as case study 3, *Khilat Jumma* (*Enjela*) located 20 kilometres away from west Tripoli. The significance of the city centre to people is due to its providing high-quality services such as banks, offices, restaurants a national museum and shopping opportunities, particularly the Old City market which is mainly jewellery and craft shops. Moreover, the city centre has many places for social interaction like Green Square which is used for festival events and it is very close to the beach. The city centre is evaluated as the main integrated area using space syntax analysis (see Chapter Seven). To be far from the city centre causes people to experience many negative effects, such as more journey time which has a negative influence on the environment from air pollution and additional money has to be spent to improve the standard of living that all seems to undermine sustainable development (see Chapter Six).

Q8- Did you make any changes in your flat? Mention (3) changes. Give (2) reasons for each change.

Yes/no	Freq	Changes	Freq	Reasons	Freq
Yes	30	Closed off the balcony.	13	For privacy. To add more area. To keep it clean from dust.	7 4 2
		Repainted / refurbished WC.	12	For beauty. Old equipment.	9 3
		Added a steel main door and steel net for the windows.	9	For security.	9
		Made new wall or added more height to existing garden wall.	6	For privacy. For extension.	3 3
		Added more area to the living room.	5	Not sufficient for family.	3
		Added a garage.	4	To allow more	2

				visitors.	
		Added a store.	4	For car security.	4
				No store space.	3
				Tidiness is	2
		Added more area to the kitchen.	4	important.	
				It was not suitable for Libyan meals.	4
		Added new WC room or divided the old one.	3		
				Help guests to feel	3
		Added a court and garden.	2	comfortable.	
				For extension.	1
				For children's play	1
		Made underground water tank.	2	area.	
				To use rain water.	2
		Separated the living room.	2		
				To increase the	2
		Added more areas to bedrooms.	2	useable area.	
				More children.	2
		Added more area to guestroom.	1		
				The area is too	1
		Made new outside guestroom.	1	small.	
				For privacy.	1
		Planted fruit trees.	1		
				To have of shade,	1
		Added new rooms to the roof.	1	fruit and greenery.	
				More family	1
		Changed the direction of the windows.	1	members.	
				For privacy.	1
No	22	No changes.	22	I have not enough money.	11
				I intend to move from my flat.	6
				Very difficult to change (prefab. construction).	4
				I do not want to spoil the view.	3
				Against the law.	2

				I am too old.	1
Total	**52**				**101**

Table: 8. 13 Respondents' reasons for making changes in their flats.

This question aims to examine the quality of space that has been provided in the flats to satisfy residents' needs. When asked about the changes that had taken place, the interviewees mentioned several changes and gave different reasons which had motivated them to made changes (see Table 8.13). Respondents are classified into two groups after answering the question. Group one, those who have made changes to their flats, (30) inhabitants, 58% from the sample. Group two, those who have not made any changes to their flats, (22) inhabitants, 42%. The main changes can be classified into six types. They are: structural, extension, internal facilities, internal space changes, aesthetic changes and environmental moderation (planting and air conditioning). People make changes to their homes when they are dissatisfied with the spaces that no longer fulfil their needs and which do not reflect their social and cultural life.

Closing off balconies are the most frequent changes made to the flats. Thirteen inhabitants did that for many reasons, such as for the sake of raising the level of privacy for inhabitants' convenience or to increase the area of the spaces that were closed to them, like the living room or kitchen or guest room. The reason for adding more spaces to the living room is to accommodate more female visitors or to use it as a bedroom for families that have many children. Adding more areas to the kitchen was given as reason since preparing Libyan meals needs a large floor area, particularly in times of celebration when Libyan society appreciates the significance of hospitality. Furthermore, closing off balconies due to not adapted to the local climate and the balconies collect dust that comes with the wind from open spaces where there are fewer planted areas and unpaved streets. Different materials are used for closing off the balconies, such as aluminium, wood, limestone and cement bricks, covered by cement plaster and painted. These differences reflect the economic situation of the family (see Figure: 8.13). Balconies are the physical link between the internal spaces (private) and external spaces (public) and should be carefully defined.

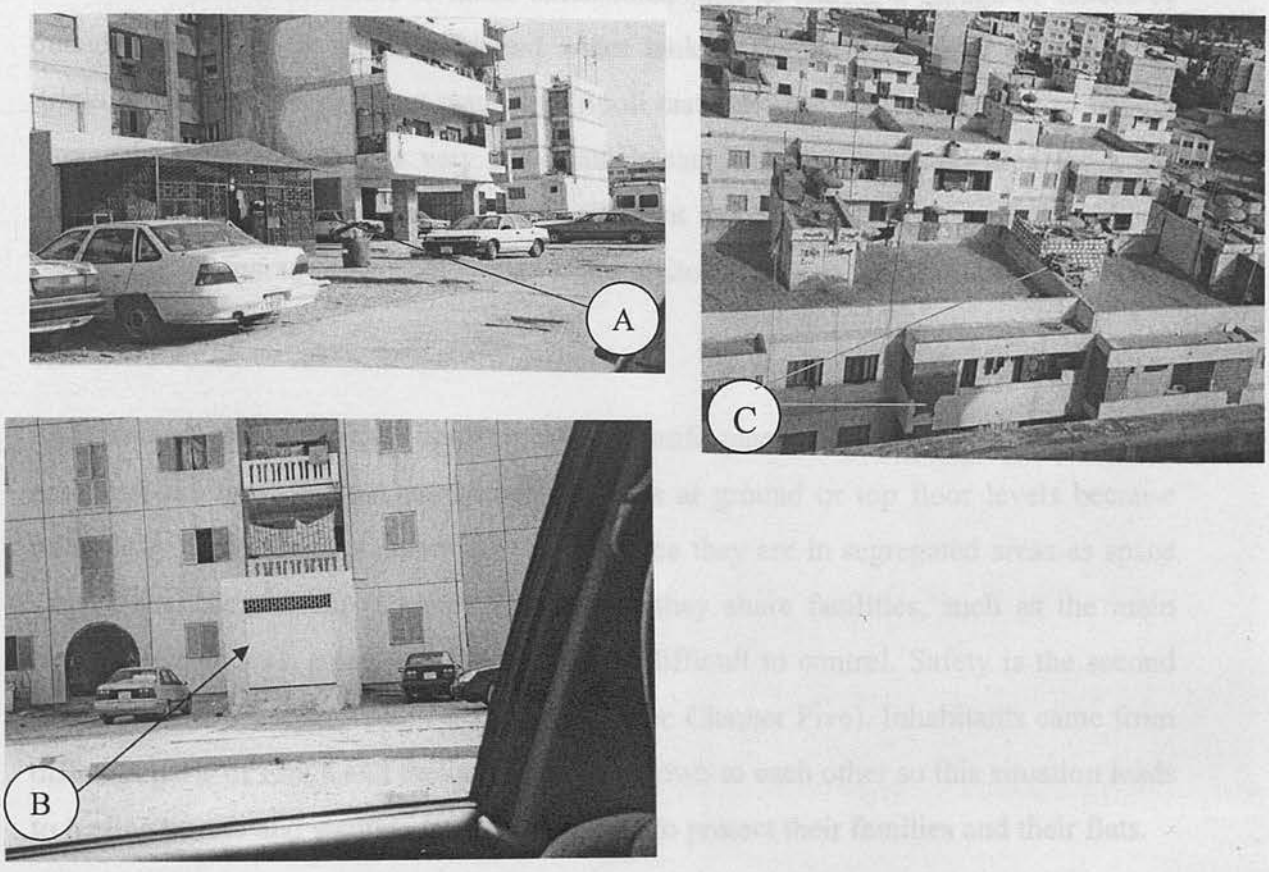


Figure: 8. 12 A- Adding shaded places in housing case study 1 B- Adding a garage.
C- Adding new rooms on the roof and closing off balconies. (Source: the author).

Figure: 8. 13 Different materials used to close-off balconies. (Source: the author).

The extension changes mainly happen in ground-level flats where the empty land around the flats is available to make extensions, such as adding a garage or fences or outside guestroom or an underground water tank to collect rain water to use it for drinking because the drinking water in Tripoli tastes a little salty. The need to have a garage in Libyan houses is very important because having a shaded area for a car prevents the hot climate damaging the car's paint and for safety reasons. Furthermore, people use the garage to accommodate more visitors or use it as an external kitchen at big celebration events.

Interviewees show that their apartments are unsafe places by adding steel main doors and steel net for windows, particularly on flats at ground or top floor levels because potentially, they can be vulnerable to crime since they are in segregated areas as space syntax analysis showed (Chapter Seven) and they share facilities, such as the main doors of the blocks, stairs and lifts which are difficult to control. Safety is the second level in Maslow's hierarchy of human needs (see Chapter Five). Inhabitants came from different parts of Libya and they are not well known to each other so this situation leads to feeling unsafe and wanting to take more care to protect their families and their flats.

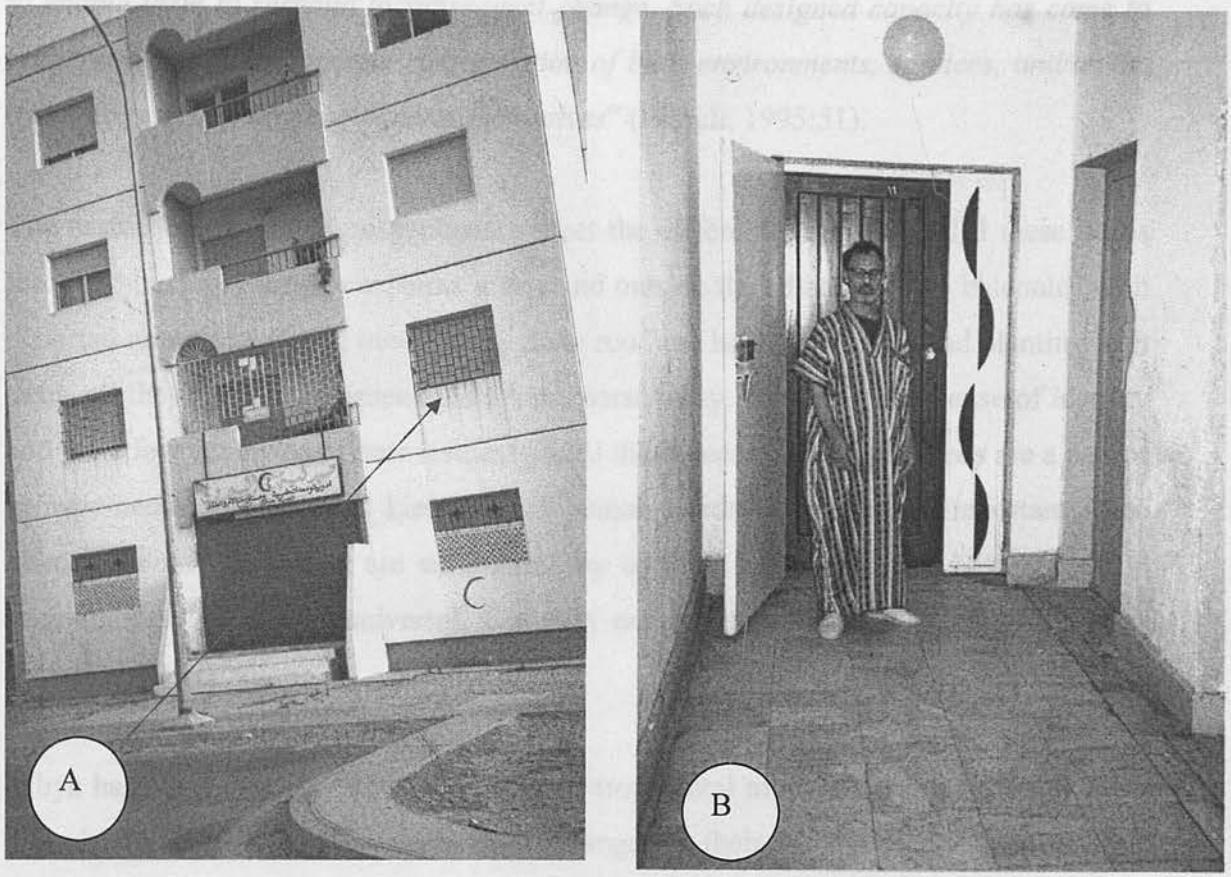


Figure: 8. 14 A – Adding steel net for windows, B- Adding steel main doors. (source: the author).

The internal space changes include creating new spaces for new functions such as adding a store room or adding a new WC or separating the old by adding or removing partition walls, and adding new doors for the purpose of providing extra privacy inside the flats. The number of bathrooms and WC (one or two) within the flats is not enough for large families. Children wait their turn for a long time to get into the bathroom in the morning (school time).

These changes take place when the structure allows such alterations to occur. Flexibility in the design of Tripoli public housing is not given sufficient care by designers; therefore users' changes are limited by the structural system (prefabricated) and the design of spaces. Because of this, the flats have failed to meet the expectations of the inhabitants and they respond to only some of the family's requirements. A public dwelling should offer flexibility and respond to family needs. Nabeel Hamdi (1995) points out the significance of flexibility, *"... it describes the capacity designed into buildings, building programs, or building technologies to ensure an initial good fit and*

to enable them to respond to subsequent change. Such designed capacity has come to influence the size and spatial configuration of built environments, services, and/or the technology of building components themselves" (Hamdi, 1995:51).

The aesthetic changes by respondents reflect the different ways they fulfil these needs through housing. Using new paints inside and outside their flats, closing balconies with different materials, adding new rooms on the roof and having a garden and planting fruit trees, all these actions enhance inhabitants' personality, belonging and sense of identity and are a few examples of how residents fulfil these needs. Aesthetic needs are a part of growth needs in Maslow's hierarchy of human needs and they are important since people become ill if they are surrounded by ugliness when they can be in beautiful surroundings. That is a universal, common experience across all cultures and ages (Maslow, 1954).

Libya has a hot, dry climate but through environmental moderation (planting, greenery and air conditioning), respondents make changes to their external and internal spaces. Moreover, it suffers from a shortage of water and greenery so that people seek to have gardens and trees. For Libyan people, trees have a high aesthetic value, they provide shade for elderly people to sit and chat, a place for children to play and they can be used as shaded areas to protect cars from direct sunshine. Furthermore, trees contribute to moderating the climate by freshening the air and filtering it from the pollution, thus contributing to environmental sustainability (see Chapter Six).

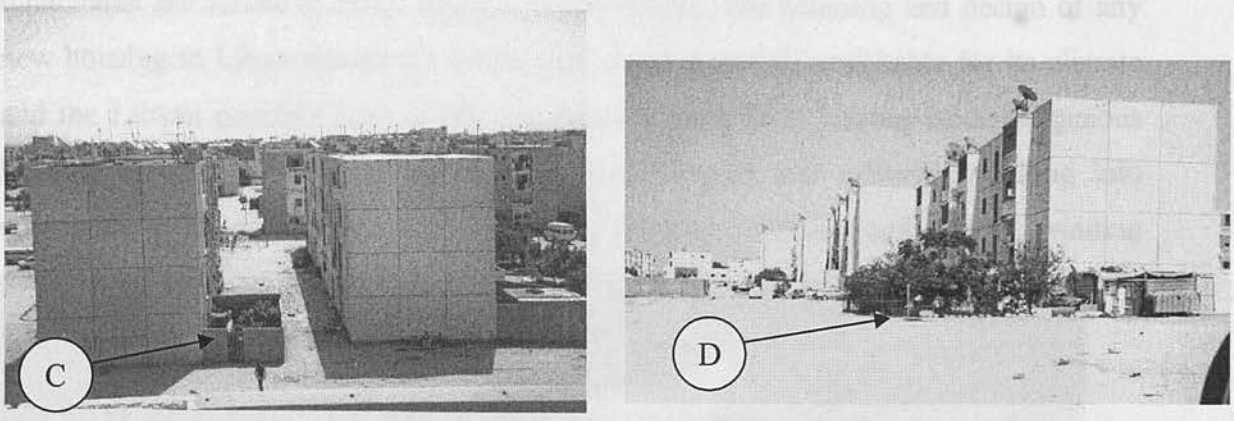


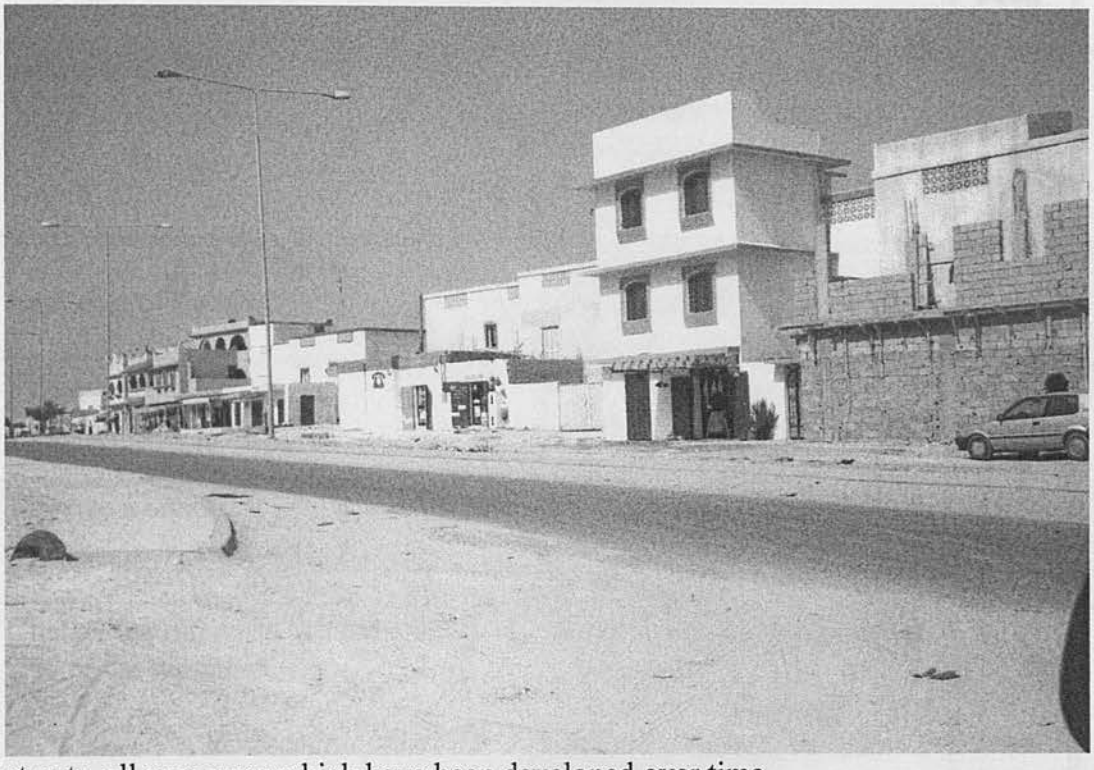
Figure: 8. 15 A, B and D -Adding fruit trees and gardens. C – Adding outside court. (Source: the author).

From field observation in the case studies of Tripoli housing (see Chapter Nine), there are many which have had air conditioning added to their flats to control the temperature inside the flats in the winter and summer because the initial choice of building material was unsuitable. Furthermore, the exterior walls are fully exposed to different weather conditions. This situation leads to increased energy consumption and cost which has a negative effect on the environment and family finances. Planning and building legislation in Libya has not addressed specific codes about how to use building material suitable for the Libyan climate.

Group two who did not make any changes in their flats indicated different reasons for that, such as: they did not have enough money; or they were interested in moving from their flats; they faced difficulty in making changes due to the construction system; they did not want to spoil the view; that any informal changes were against the law. It seems from the reasons given that those people face obstacles to making changes and they were dissatisfied with spaces in their flats. Moreover, planning and building legislation as a tool should be helping them to satisfy their needs in housing rather than being an obstacle to having their needs met.

The results show that the public apartments of Tripoli do not satisfy the requirements of users in providing adequate spaces for functions of family living and cultural need. The design of internal spaces within flats is not suitable to accommodate all family members', particularly large families and to do all the necessary activities, so

inhabitants are forced to make changes to the spaces. The planning and design of any new housing in Libya should not adopt spaces and materials unsuitable for its climate and the Libyan people's way of life and it could learn more lessons from indigenous housing in Tripoli Old City which have been adopted and refined by taking into consideration the local climate, and by using compact buildings and narrow, winding



streets, all processes which have been developed over time.

Figure: 8. 16 Adding new spaces with different decoration. (Source: the author).

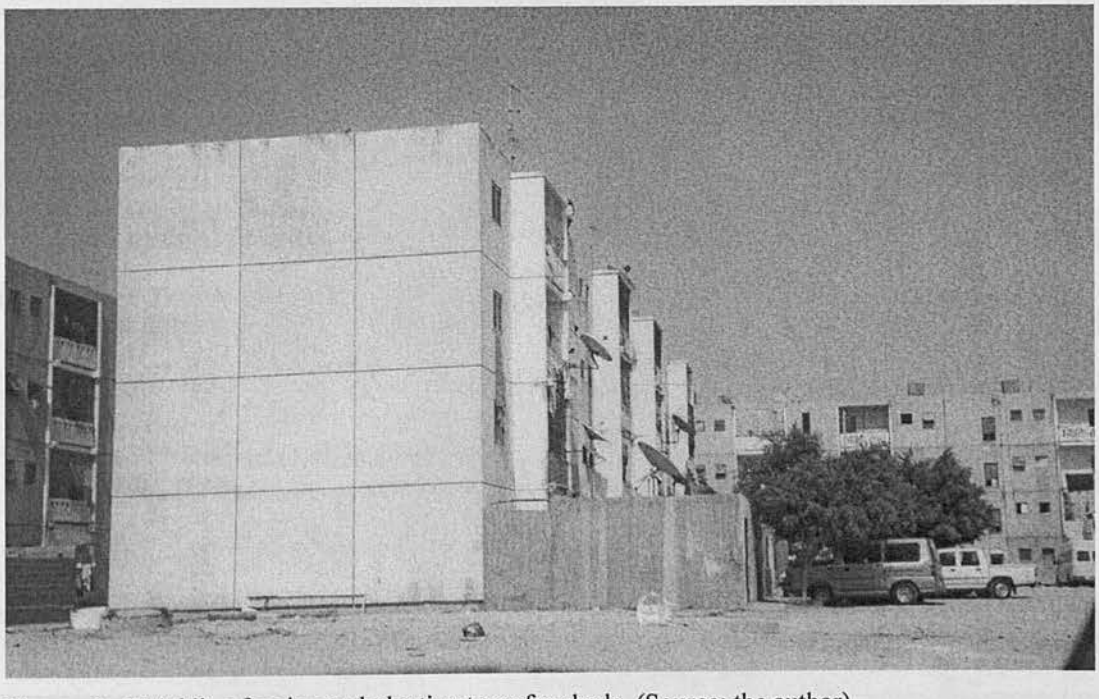


Figure: 8. 17 Adding fencing and planting trees for shade. (Source: the author).

Q9- Mention (3) changes you would like to make in your flat but which you cannot. Give (2) reasons for that.

Changes	Freq	Reasons	Freq	Total
Add more rooms.	22	There is no available area. Prefabricated system is difficult to add to. I do not want to break the law.	12 8 4	24
Add more covered area to total area of the flat.	22	The flat is within a block. Prefabricated system difficult to modify.	15 10	25
To have a store room.	11	Not enough area. Too difficult to modify the design of the flat.	8 5	13
To have a court.	10	The flat is on an upper floor. No area. It is against the law.	6 4 2	12
Change the direction and the size of the windows.	10	Concrete walls do not allow changes. Observance of overall building design character. Against the law.	8 5 3	16
Add air-condition units.	9	I do not have enough money. I do not want to spoil the elevation.	7 5	12
Add a garage.	8	No space, my flat is on an upper floor. The law does not allow it.	6 4	10
To make extension to the kitchen.	7	I have not enough money. No additional space.	5 4	9
To have a garden.	6	The flat is on an upper floor. No space to do it. Planning law will not let me do it.	4 3 3	10
Add a living room.	6	No money to do it. Difficult to modify the design. No space to do it.	5 3 2	10
Add new rooms on the roof.	4	I have not enough money. Against the law.	3 2	6

Add balcony areas.	4	Spoil the view. I have not enough money.	3 2	5
Add a study room.	4	Limited space. Difficult to modify the design.	3 1	4
To have large toilets.	3	Prefabricated system is difficult to modify. I have not enough money.	2 2	4
Change the internal doors and widen them.	2	Prefabricated system is difficult to modify.	2	2
Add an outside guest room.	2	No space to do it.	2	2
Widen the balconies.	2	Prefabricated system difficult to modify.	2	2
Improve the landscaping around the block.	2	Not enough water.	2	2
Add a lift.	2	Prefabricated system is difficult to modify.	2	2
Build an outside kitchen.	1	No space to do it.	1	1
Total	**137**			**171**

Table: 8. 14 The desired changes and the obstacles that prevent them.

In Table 8.14 the interviewees show their desire to make changes to their flats and demonstrate the obstacles which prevent those desires being met. The greatest wish is to add more rooms (22) and to add more area to the total floor area of the flat (22). The number of bedrooms within the apartments are limited to one, two or three is the maximum (see Chapter Nine) which is unsuitable for large families with six or more children (male and female) and in some cases, close relatives, such as grandparents; and married sons will live in the same flat as their parents for a short period until they get their own flats. Adding rooms on the roof, such as bedrooms, a living room, store room and kitchen are only available to inhabitants who occupy the upper floor and who have the ability to make vertical extensions.

Respondents evaluate the floor area of their flats as too small to accommodate socio-cultural needs, such as hosting celebrations, the way of sitting and eating (on the ground) and the significance of hospitality that is reflected in the floor area of the flat, therefore respondents' key wish is to add more space to the total floor area. The reason for having a large bathroom is that Libyan people place the washing machine within the

bathroom and use the balconies to dry clothes due to lack of particular room for washing in the Tripoli case studies' apartments. Whereas in the Libyan traditional house, the courtyard was used to accommodate washing and drying clothes, as well as other activities.

These responses indicate that the spaces and the total floor area of the sample of public housing in Tripoli are not satisfying the inhabitants' needs and this is generating more problems for them. Planning and building legislation codes, such as setback requirements, site coverage, building height and density play an important role in limiting the number of spaces and floor area (see Chapter Four).

Q10- Mention (3) important things you miss in your flat and give one reason for each.

Things	Freq	Reason	Freq
More rooms.	15	I have more children. Separate males from females. Allow more visitors.	7 5 3
A court and garden.	12	For extension and privacy. For children to play. Good view. Place where I can entertain visitors.	5 4 2 1
A storage place.	11	To use other spaces better. No place to store goods.	8 3
A courtyard.	9	For privacy. To make an underground water tank in it. For good ventilation and different activities.	4 3 2
Air-conditioning units.	8	To reduce the high temperature inside the flat.	8
More area for the living room.	8	To be suitable for more women visitors. To be suitable for family activities. To have children's play area.	3 3 2
New furniture and equipment.	6	To look good to visitors. Family activities become easier.	5 1
Garage.	6	To protect my car from theft. To protect my car from heat.	4 2

Large separate toilets.	5	Comfort for both family and visitors. The two toilets in the same area.	3 2
A fountain.	5	Beauty. To reduce the heat.	3 2
Increased kitchen area.	4	Comfort for the housewife. To be suitable for preparing Libyan meals.	2 2
Room for washing.	3	To keep the flat tidy. More clothes need a special area.	2 1
Change the direction and the size of the windows.	3	For privacy. To not look identical to other flats.	2 1
Study room.	3	It is important for the family.	3
Area for children to play.	3	To be under mother's care. To satisfy their play needs.	2 1
More area for balconies.	2	For drying clothes. Extension for living room.	1 1
More area for bedrooms.	2	More family members.	2
Private entrance.	2	For privacy. To have ability to control.	1 1
Internal decoration.	1	To make the flat look good.	1
Lift.	1	Easy way for old people to go up and down.	1
Underground water tank.	1	To have a constant water supply.	1

Table: 8. 15 The features missing in flats and the reasons given for these choices.

Question 10 shows that the most important things that the interviewees miss from their flats. These things could be classified as: improving the function of the existing internal spaces, adding new spaces and improving the quality of the internal and external spaces, such as making a landscape around the apartments blocks or a garden, internal decoration and having new furniture and equipment.

The location, height and the size of windows in dwellings play an important role in decreasing or increasing the privacy from inside and outside the apartments. As discussed in Chapter Four, window design in courtyard houses is done carefully to give full privacy to the family, whereas in Tripoli public housing (the case studies), the flats' windows are outward looking, and of the same size and height for reasons of economy and regularity of design. This approach does not consider the location and distance between the apartment blocks which causes a lack of privacy and makes the inhabitants close the windows that overlook neighbours all time, thereby creating a negative effect.

From these results from questions 8, 9, 10, it is clear that most of these concerns are keenly felt and shared by respondents and they demonstrate and reflect the significance of these matters to the residents and how the design of Tripoli public housing has failed to meet the real needs of people. The lack of children's play areas, privacy and special needs for elderly people are examples of that. Planning and building legislation in Libya can contribute to improving the design of housing by addressing these issues.

Q11- Is the space in your flat suitable for your family Yes/no? Mention 3 reasons for that.

Yes/No	Freq	Reasons	Freq	Total
Yes	8	I have added more area to the bedrooms, living room and kitchen.	7	16
		My family has few members.	4	
		There are special rooms for males and females.	3	
		The flat is tidy.	2	
No	44	The number of rooms is not suitable for family members.	28	104
		Lack of special rooms for males and females.	16	
		Lack of a store room.	15	
		The spaces in the flat are too narrow.	13	
		The kitchen area is not enough.	12	
		The living room is too small.	8	
		The guest room area is not enough.	6	
		Lack of children's play area.	5	
		Lack of an office room in the flat.	1	
Total	**52**			**110**

Table: 8. 16 The suitability of the spaces within the flats for families and the reasons given for these choices.

From the answers (44) interviewees said that the spaces within their apartments are not suitable for their families and the main reason (28) is that the number of rooms does not correspond with the family members' needs as well as for other reasons, such as the need for private rooms for males and females, lack of a store room and particular spaces, such as a guest room, living room and kitchen not having enough space for functional activities.

The segregation of males and females within the family is an important factor in bedroom allocation and design and can be understood as a response to some special

teachings and interpretations of religious faith. Muslims seek guidance on all the aspects of living from the holy *Quran* and the *Hadith* (see Chapter Four). The requirement for the seclusion and segregation of females and males, dictates the need to have minimally, one bedroom for females and another one for males. Public housing in Tripoli is failing to fulfil this need, particularly for larger families, as is shown in Table 8.16.

The interviewees who are satisfied with the spaces in their flats (8) give different reasons for that. The most cited reason (7) is that the spaces become suitable after more space has been added, such as to a living room, bedrooms or kitchen. Other reasons which play an important role in making the spaces satisfactory are, the fewer family members there are, this makes available private rooms for male and females and helps to maintain a tidier flat.

Q12- If you had the chance to participate in designing your house, what kind of things would you wants to be in it? Mention 3 things and give 1 reason for each.

Things	Freq	Reasons	Freq
Large area for the house.	16	To be suitable for family members.	16
Not less than 4 bedrooms.	16	Males and females have their own rooms.	16
Large separate hall.	15	To accommodate visitors and for privacy.	13
A garage.	13	For car protection and to use as a kitchen when there are	
A store room.	12	celebrations.	12
A garden.	10	Important space for Libyan families.	10
Internal courtyard.	8	It is a green space inside the city	
A fence.	8	for the family.	8
Internal and external toilets.	6	For family activities.	8
Large kitchen.	6	For privacy.	6
		Easier use for family and visitors.	6
Study or office room.	5	To be suitable to prepare Libyan meals and have new furniture.	5
New decoration.	5	Suitable space for reading and	
External guestroom.	4	collecting books.	5
The house should be free-standing.	3	To give a good appearance.	4
		For more privacy.	3
A fountain.	2	To not feel annoyance from neighbours.	2
The house should have two floors.	2	To reduces high temperature and for beauty.	2

The walls should have good heat and sound insulation.	2	To accommodate family members.	2
Water tank.	1	To feel comfortable.	1
A swimming pool.	1	To have a constant water supply.	
The house should be economic in space.	1	Good swim, education and exercise for children.	1
The design of the house should respect the customs and traditions.	1	To save money.	1
		To fit way of life and to feel comfortable.	1
Total	**122**		**122**

Table: 8. 17 The desired features interviewees would like to have in their dwellings and reasons for their choices.

The results shows 21 architectural elements and reasons for respondents' wishes about what they want in their homes and which reflected their desires, and clearly it shows what they are missing in their current flats. It seems that the results reflect the real criticisms of public housing in Tripoli. Respondents need to have large covered areas and more bedrooms. These are the key priorities, as Table 8.17 shows. Al-Maulode, (1998) recommends in his study that the covered area for Libyan houses should be increased to fulfil social needs in internal and external spaces and suggests areas for different dwellings and plots that would have a minimum of two bedrooms and up to five bedrooms (Al-Maulode, 1998:456-457). Regulation plays a major role in limiting covered areas by building height, density and size of the plot (see Chapter Four).

Q13- Where do you accommodate your visitors when you have (happy or sad) celebrations? Please give 3 examples.

Places	Freq	Percentage
Rent a tent and build it on free space in front of the block.	36	34.95%
Use my neighbour's flat.	28	27.18%
Inside my flat for small celebrations.	20	18.42%
In my neighbourhood's mosque hall.	7	6.80%
On the roof of my block in summer time.	6	5.83%
In the space inside my boundary fence.	3	2.91%
In my father's house which was my original place of residence.	3	2.91%
Total	**103**	**100%**

Table: 8. 18 The celebration places.

When asked about accommodating visitors for (happy or sad) celebrations, the respondents show (7) different places such as a tent, neighbour's flat, own flat, mosque hall, roof of the block, outer court or father's house. The main way to provide accommodation (36) is to rent a tent and set it up on free space in front of the block, which is a very common practice in Libyan society to use such space as a temporary location. This practice needs to have enough free space near the flats and this feature should be considered in any future housing layouts. People use a large tent because it is easy to erect and remove, as well as being easily available from many hire places, including celebration equipment and removable furniture. Relatives and neighbours participate in putting up the tent, the furniture and providing food for visitors.

The second most important space is using neighbour's flats (28). It is very common in Libyan society to use a neighbour's home, particularly where there is a good relationship with them. The neighbour leaves his home, allowing his neighbour to use his home for visitors for three days or more, sending his family to participate fully in the celebration, knowing that his neighbour will do the same when he wants to have his celebrations.

People use the mosque hall for sad and religious celebrations. It is important to have this as it serves as an annex to the mosque in every neighbourhood. Sad celebrations, such as death can come suddenly and time is needed to prepare places to accommodate people who will be coming from different cities and villages and some of them with their families. The mosque hall is usually built with the help of all people who live in the neighbourhood and it has a social and religious function.

It is common in Libya to use the roofs of houses to accommodate more visitors at wedding celebrations, particularly women and in the summer time because flats become very hot and people seek the fresh air or look for more free space available around their house. People cover the part of the roof which has a high parapet, with a tent for privacy. In Tripoli public housing, people face difficulty in doing that since some of the roofs are unsuitable because of their construction system, as in *Hay 2 March* (Case study 2).

Q14- In what type of dwelling do you prefer to live (flat, courtyard house, detached house, etc?). Give 3 reasons for your preference.

Dwelling Type	Freq	Reason	Freq	Total
Detached house. (Villa)	40	Possibility for future extensions according to family requirements.	21	
		Psychological relaxation.	12	
		Far from overcrowding.	11	
		The design accords with family needs and modern equipment.	11	
		Far away from noise, disturbance and problems.	10	
		Has good privacy.	10	
		It provides a green space for children and visitors.	9	
		It has a garden.	8	
		It is modern.	5	
		It has good ventilation.	4	
		I feel that I am from a high class.	3	
		There are no high stairs to climb.	3	107
Courtyard house.	11	It has good privacy.		
		Suitable for local climate.	8	
		Psychological relaxation.	6	
		It has good ventilation.	5	
		It is not shared with the others.	5	
		The number of rooms is suitable for the family.	3	
		It can easily accommodate visitors when I have celebrations.	3	
		Ability to have a fountain and greenery.	2	
			1	33
Flat.	1	No need to build (not enough money).	1	1
Total	**52**		**141**	**141**

Table: 8. 19 The preferred dwelling type.

Respondents show three different preferred dwelling types and give many reasons for that as shown in the table above. The main preference (40) was for a detached house (villa). This type of house is preferred because it offers the possibility for future extensions, depending on family requirements. Future extension is very important for Libyan families because they still have strong ties to relatives leading to extended families. People who live in public housing high-rise blocks miss the potential to make any future extension to their flats that could sustain their way of living. This type (villa)

has a large lot surrounded by a fence in quiet areas and has enough places and spaces suitable for carrying out Libyan customs and traditions. Moreover, the family can participate in the design of the house.

The courtyard house is the second preference (11). The respondents who prefer this type give many reasons for that, such as it provides good privacy, it is suitable for local climate conditions, it has good ventilation, and offers a space for relaxation as it has quiet spaces, such as the court with planting, a fountain and high privacy. A good example of this type of house can be found in Tripoli Old City. This type is no longer constructed due to the application of modern regulations. The third type is the flat which is unsuitable for many lifestyles or traditions and was chosen for economic reasons only.

Q15- What kind of relationship do you have with your neighbours (excellent, good, weak, bad)? Give 3 reasons why.

Relationship	Freq	Reasons	Freq	Total
Excellent	33	We collaborate when there are celebrations.	20	
		We respect each other.	15	
		We are from the same class.	8	
		There are no problems between us.	8	
		I feel safe with them.	5	
		My neighbours are my relatives.	5	
		Old relationship between us.	5	
		They have good morals.	5	
		They take care of my family when I am out.	5	76
Good	13	They assist me.	8	
		I have no problems with them.	5	
		We are from the same economic level.	5	
		We have the same customs and traditions.	4	
		We take care of each other.	3	
		We participate together in celebrations.	3	
		Not much association.	3	
		Very little disturbance.	2	33
Weak	4	Educational differences.	3	
		A lot of disturbances.	3	
		A lot of quarrels.	3	
		Economic differences.	2	
		Social differences.	1	
		No good collaborations.	1	13
Bad	2	They do not collaborate to maintain the block.	2	
		They do not collaborate to clean the block.	2	4
Total	**52**			**126**

Table: 8. 20 The relationship with neighbours.

As shown in Table 8.20, the majority of the interviewees (33) have an excellent relationship with their neighbours and (13) have a good relationship and give several reasons for that. Collaboration is the highest reason that enhances the relationship, particularly when there are celebrations, where the organisers seek help from their neighbours when preparing food and when they are looking for free space to accommodate a large number of visitors.

Islamic teaching encourages good collaboration between neighbours (*Aljeraan*) and sees it as of great value. The preservation of socio-cultural values is the aim of social sustainability (see Chapter Six). Some interviewees mention that they have longstanding relationships with their neighbours before they moved to their public housing flats, or their relatives lived in the same block and that had helped to foster excellent relations. Excellent or good relations between *Aljeraan* leads to fulfilling physical and physiological safety as one of Maslow's basic human needs (see Chapter Five). Living harmoniously with neighbours in neighbourhoods can be a good motivation for continuous social sustainability.

Some interviewees evaluate their relationship with their neighbours as weak or bad (6) for many reasons, such as educational differences or they come from a different background making it difficult to understand each other, particularly in the early occupation years. There are many reasons for Tripoli public housing high-rise blocks to have a negative effect on the relationship between neighbours, such as the fact they have to share public facilities (stairs, main entrance) and an unwillingness to participate in cleaning and maintenance can occur in these facilities, as well as a lack of privacy (visual and auditory) in public housing, which can be another source of tension in these relationships.

Q16- Mention 3 things you most like to have in your current flat and give 2 reasons for each.

Things	Freq	Reasons	Freq	Total
Fountain and garden.	9	Greenery and it reduces heat. Beauty. Privacy and freedom to move.	9 7 5	21
Large kitchen.	8	Suitable for Libyan meals. A lot of celebrations.	8 6	14
Enough bedrooms.	8	To be suitable for the family. For relaxation.	8 6	14
Air-conditioning.	6	High temperature. The flat has poor heat insulation.	6 2	8
A garage.	6	To protect my car from theft. To protect my car from climate.	6 5	11
Modern furniture.	5	Give a beautiful impression. Make the flat look good.	5 3	8
Study room.	5	For knowledge and keeping books.	10	10
Large guest room.	5	I have a lot of guests. For special celebrations.	5 3	8
Good modern toilets.	5	For health. Modern life.	6 4	10
Outside court (enclosed).	5	Freedom to move and privacy.	5	5
A store room.	5	To store things. To have more space in kitchen.	5 4	9
Courtyard and roof.	5	For privacy. To use in summer time.	5 5	10
Large living room.	4	To suit women guests and family. Social needs.	4 4	8
Wider balconies.	4	To use in the summer time. For drying clothes.	4 4	8
A telephone.	3	Communication. Get information from the internet.	3 2	5
Water tank on the roof.	3	Discontinuous water supply.	3	3
Indoor plants.	3	Good view. Relaxation.	3 1	4
East direction for the flat.	2	Healthy ventilation. Natural light.	2 2	4
Luxuries.	2	Relaxation. Feeling superior.	2 1	3
Water well.	2	Discontinuous water supply. For garden watering.	2 2	4

Lift.	2	For sick people. To ease daily life.	2 2	4
Good ventilation.	1	Health.	1	1
Computer.	1	Educational purpose. Modern life.	1 1	2
Good sound insulation.	1	For privacy. To minimise disturbance.	1 1	2
Good water proofing.	1	No leaking. Less maintenance.	1 1	2
Gypsum decoration.	1	Beauty. Relaxation.	1 1	2
Steam bath.	1	For general health.	1	1
Total	**101**			**172**

Table: 8. 21 Things most liked in current dwelling and reasons for that.

Respondents mentioned several aspects they most liked in their homes and gave different reasons for these: physical, symbolic, climatic, educational, social, and aesthetic. According to Maslow's hierarchy of human needs, these can range from basic needs to growth needs (see Chapter Five). The basic or physical needs include those required to maintain the human body, such as Table 8.21 shows: a water well, health care, safety and privacy. The growth needs are educational, esteem and aesthetical. Some respondents have a shortage of basic needs in their flats, such as problems of regular water supply and good quality water. It is common for the Tripoli water supply to be cut off for some hours each day, therefore people want to have their own water well or to add a water tank on their roof as a precautionary measure.

Interviewees show more attention to health care as a basic human need by having good modern toilets, steam baths and a preference for their flats to be facing in an easterly direction for sunlight and good ventilation. Safety and privacy are very important matters for the interviewees who mentioned this several times, 260 for privacy and 139 for safety in this questionnaire survey. Some respondents primary wishes are to have enough bedrooms, a courtyard, good sound insulation and a roof with a high parapet for their daily activities and privacy.

Education is very important to Libyan people. The better educated and qualified people in Libya are, the better jobs they can get and society shows them respect and accords

them a higher status. Therefore every family desires to educate their children and assigns a large part of their income for this purpose. The desire to have study room with computer and telephone by some respondents (6) is an indicator of cognitive needs, one in the hierarchy of human needs (see Chapter Five).

The desire to have modern furniture, luxurious fittings and decoration in their dwellings reflects how respondents show their status to visitors and fulfil their esteem needs through that. Libyan people aspire to decorate the entrance, the guest room and living room with gypsum-coloured decoration or glass tiles on the walls and roof and further enhance their homes with modern furniture, such as a sofa or Arabic seating that reflects their aesthetic taste and which is a symbol of development and modernisation (see Chapter Two). The answers reflect clearly what the interviewees miss most from their current dwellings and these can be good indicators in evaluating these flats, in terms of making improvements to public housing through planning and building legislation.

Q17- Mention 3 things you do not like in your current flat and give 2 reasons for each.

Things	Freq	Reason	Freq	Total
Balconies.	9	Dust source. Lack of privacy Unsuitable for Libyan families.	9 8 1	18
Windows that overlook the neighbours.	8	I have to keep them closed. Lack of privacy.	8 8	16
Tight spaces.	7	Not suitable for the family. They give a bad feeling. More time needed for searching things.	7 4 3	14
Prefabricated system.	6	Not good insulation. Difficult to maintain.	6 5	11
The noise.	6	It is hard to sleep. Annoyed by the neighbours. Negative effect on studying.	5 4 3	12
Shared and high staircases.	5	Difficult for old people. Unclean space. Place of conflict between neighbours.	4 3 3	10
Small kitchen, toilets and sewage pipes.	4	Not suitable for the family. Always needs maintenance.	4 4	8
Humidity in the flat.	4	Cause of illness.	3	

		Damages the painting. Expensive maintenance.	3 2	8
Few bedrooms.	2	Not restful for the family. Bad effect on children.	2 2	4
Rooms facing west.	2	High temperature in summer and low temperature in winter. Frequent repainting.	2 2	4
Animals inside the house.	2	Pollution. They destroy the plants. Culturally unpleasant.	2 1 1	4
Interruptions to water supply.	2	Feeling fatigued. Tired of bringing water.	2 2	4
Disorganisation.	2	Causes anxiety.	2	2
The flat is in a block.	2	There is less privacy. Annoyance. Disputes between neighbours.	2 1 1	4
Thin walls.	1	Not good for sound insulation. Easily damaged.	1 1	2
Polluted environment.	1	The neighbours not helpful. A lot of litter.	1 1	2
High temperature indoors.	1	Causes stress. Lack of sleep affects concentration.	1 1	2
High fences.	1	Insecure feeling. Block off the view.	1 1	2
Children playing inside the flats.	1	Annoys neighbours.	1	1
Guest room is not well segregated from family rooms.	1	For privacy. Annoys guests.	1 1	2
The flat is on an upper floor.	1	Difficult for elderly people. Tiring.	1 1	2
Total	**68**			**136**

Table: 8. 22 Things disliked in current dwelling and reasons for that.

Interviewees point out several negative aspects in their flats accompanied by different reasons. Most of these things are reflected in applying planning and building legislation to such aspects as balconies, windows which overlook neighbours, thin walls and the organisation of internal spaces that are unsuitable for local customs.

The results show that interviewees are most concerned about balconies (9) for many reasons, such as balconies are unsuitable for the local climate where dust wind is very

common making the balcony a place where the dust collects, as well as playing a negative role in decreasing privacy when residents cannot use them as a sitting place because they are overlooked by neighbours. As a consequence, people cannot use them as the designer intended and in their search for privacy, they prefer to modify or close them. In these flats people use balconies as places for drying clothes because the flats are lacking in these particular facilities.

The prefabricated construction system which is adopted for public housing in Tripoli, such as case study 2 and 3 show, is mentioned as one of the things that some of the interviewees (6) do not like in their flats for many reasons such as: poor sound insulation, particularly thin internal walls (15cm) and if sound-proof layers have not been added, as in the Tripoli case studies, this contributes to decreasing auditory privacy, a lack of flexibility for extension, gives a similar elevation for the street and is difficult to maintain. The prefabricated construction system was adopted due to its reduced construction time and it saves money by producing typical, standardised elements.

Some respondents disliked being in flats within blocks because this situation does not reflect the way things used to be in (traditional houses). Living in public housing – flats within blocks – generates several problems that did not arise previously in their traditional way of life. For example, the noise that children make when playing in staircases and inside the flats, the less care shown about cleaning shared facilities such as stairs and main entrances and the difficulty in maintaining lifts in high-rise blocks due to the need for professional people to do that work and the need for more money for their work. From the researcher's observation in Tripoli public housing case study 1, it was found that most of the lifts were out of use and residents were forced to use the stairs up to the twelfth floor carrying their children and goods with them; and the elderly and sick people who lived on the upper floors faced critical problems from out of use lifts. The unclear boundary between private and public spaces within the layout of residents' blocks leads to uncontrolled external spaces around the blocks, physically and socially from local residents and they become the source of many problems. This situation is opposite to the housing layout of Tripoli Old City where the boundary is clear defined see (Chapters Two and Four).

Q18- Mention 3 building materials you consider to be suitable for your dwelling. Give 2 reasons for each.

Building materials	Freq	Reason	Freq	Total
Limestone.	18	Local material. Easy maintenance. Sound resistant. Inexpensive. Easy to built in short time.	12 8 7 5 4	36
Aluminium.	10	Beautiful. Lightweight. Modern. Suitable for the climate. Good finish.	7 5 5 3 3	23
Glazed tiles.	10	Easy to clean. Beautiful. Resistant to humidity.	9 9 4	22
Gypsum.	8	Easy to shape. Beautiful and sound resistant.	8 8	16
Cement brick.	7	Inexpensive. Heat resistant when doubled.	7 7	14
PVC pipes.	7	Less maintenance. Salt resistant.	7 7	14
White paint	5	Reflects the heat. Beautiful.	5 5	10
Natural stone.	5	Local material. Beautiful. Long life.	5 4 1	10
Natural timber.	4	Easy to maintain. Does not damage the environment. Sound resistant.	4 3 1	8
Baked brick.	4	Looks beautiful. Water resistant. Lightweight.	4 3 1	8
Marble.	4	Shows good value in the dwelling. Easy to clean. Long life.	4 2 2	8
Floor mosaic tiles.	3	Good looking. Easy to clean.	3 3	6
Concrete.	3	Strong and safe. Easy to form. Suitable for large areas.	2 2 2	6
Total	**88**			**181**

Table: 8. 23 Suitable building material and reasons for these choices.

The respondents to this question referred to several building materials that they considered suitable for their dwellings and gave different reasons for that. The most preferred building material was limestone (18). Limestone is very common and widely used in most old and new Libyan cities, particularly in coastal and mountain regions for building dwellings due to its availability, affordability, its regular shape, its easy maintenance and good sound resistance. The main sources of these blocks are specific areas near the seashore. People (who work in this job) use machines to cut the lime stones. The blocks usually are white in colour and cuboid-shaped (40×25×15) cm. The defect of limestone is it is heavy and is not good for heat resistance.

Aluminium and glazed tiles are the second top preference (10) in the sample. Respondents prefer aluminium because of its beauty, it is lightweight, modern and suitable for the climate. Aluminium is an imported material and is used for window frames and doors in different kinds of buildings. Glazed tiles are a well known building material from ancient times and mainly used to cover walls in bathrooms and kitchens since they are easy to clean and humidity resistant as well as used in internal walls for decoration. Respondents evaluated glazed tiles precisely for these qualities. Glazed tiles are used for decorative purposes in many buildings such as houses and mosques in Muslim cities, particularly in North Africa, Iran, Andalusia, Iraq and south Russia. Several forms, colours and Arabic letters are given to glazed tiles for high aesthetical value. Gypsum, timber and stone are local and natural materials used extensively in traditional building. People used to build their dwellings with available local materials that could be reused afterwards such as stone, sand and palm timber which sustained the environment and minimised the use of imported materials. Gypsum in traditional buildings was used as binding material before cement was introduced whereas these days, it is used only for ornamentation. El Fortea, (1989) in his study of indigenous and modern housing in Libya considers that the main criteria for local materials used were the availability, ease of handling and minimum effort in gathering and preparing the material before its use in construction (El Fourtea, 1989:41). These days most building materials and construction techniques are imported, such as prefabricated concrete elements which are discordant with the local environment and that causes many problems.

Natural stone is still preferred as shown in Table 8.23. People have used it for different building purposes such as dwellings, places of worship, leisure places from very early times in Iraq, Egypt, Rome and Greek due to its strength, thermal insulation properties, and aesthetical appearance. Stone represents a symbol of nature, its softness and power. In Libya people now use stone in their dwellings as external decoration or for cladding the walls only for aesthetical purposes and other modern materials have assumed its original function due to lower cost and easier application.

The significance of building materials which play an important role in gratifying human needs and sustainability, as can be seen from respondents' perceptions, should be addressed with more care to produce a more comfortable way of life, physically and spiritually. Libyan building and planning legislation currently is issued without addressing specifically building materials. That is considered as being a gap in planning and building legislation.

Q19- Mention 3 building materials you consider unsuitable for your dwelling. Give 2 reasons for each.

Unsuitable materials	Freq	Reason	Freq	Total
Timber	11	Not good for hot climate. Easily damaged. Costly.	9 7 6	22
Prefabricated concrete.	9	Difficult to maintain. Not good for sound resistance. Not suitable for local climate.	8 6 4	18
Rough finish.	7	Easily dirtied. Collects dust.	7 7	14
Large window panes.	7	Source of heat. Easy to break. Costly. Not good for privacy.	5 4 4 1	14
Windows with steel netting.	5	Dangerous when there is a fire. Looks like prison.	5 5	10
Garden tiles.	4	Do not reflect heat. Good for gathering dust	4 4	8
Steel doors.	3	Ugly looking.	3	3
Floor mosaic tiles.	2	Costly. Heavy weight.	2 2	4
Total	**48**			**96**

Table: 8. 24 Unsuitable building materials and reasons for these choices.

Results show that (11) interviewees consider timber as an unsuitable material for their dwellings because of its unsuitability for the local climate, it is costly and easily damaged. Currently in Libya, most timber is imported for several uses, for example, doors and windows, furniture and for construction purposes. In traditional building people used local timber which was available around them, such as date palm and olive trees for construction as well as furniture and kitchen equipment.

Prefabricated concrete is an unsuitable building material that was mentioned by some respondents (9). Prefabricated concrete was known in Libya as a material for building public housing in the early 1970s and was used in walls, columns and ceilings (see Chapter Nine). From their experience, interviewees evaluate it as unsuitable for their dwellings due to maintenance difficulties, poor sound resistance, inflexible for future extension and unsuitable for the local climate. The main criterion for having a prefabricated concrete system in housing is to build a large number of flats in less time and to reduce building costs.

Interviewees complain about large window panes in their flats and mention important reasons for this, such as internal spaces gain more heat, large panes are easy to break, costly and they reduce household privacy. The windows in Tripoli public housing are large and face onto the streets or neighbours, which forces inhabitants to keep most of the windows closed all the time. Furthermore, they have two layers, the internal one is a glass frame and the external, is a wooden shelter as result of the application of Libyan planning and building legislation which has fixed codes which states public housing must have large windows, outward looking onto the streets. While in the traditional courtyard houses, windows have less area and face inwards for social and climatic purposes see (Chapter Four).

People add steel netting to windows and steel doors; reinforcing main doors to their dwellings for safety reasons. Some of the respondents (8) mentioned that steel doors and steel netting for windows are unsuitable materials for their dwelling despite providing physical protection against theft since it can be dangerous when there is a fire by making escape difficult and making the dwelling look like a prison.

Generally the results shows that interviewees were mainly dissatisfied with most of the modern building materials that have been imported and they are alien to them due to these materials being associated with more negative effects on the built-environment. Building materials should be carefully selected to sustain their function and be in harmony with the environment. Planning and building legislation can enhance and support these choices.

Q20- Give me your opinion about the following things in your flat and give (2) reasons for your choices.

Things	Opinion	Freq	Reason	Freq	Total
Natural lighting.	Good	42	Wide windows and open to the outside.	42	
				22	
			Good direction.	20	84
			Open in most directions.		
	Weak	2		2	
			Close to neighbouring blocks.	2	4
			Small area.		
	Bad	4		4	
			Not enough sunlight.	4	8
			Tall block near the flat.		
Ventilation.	Good	39	A lot of wide openings.	25	
			Good design.	24	
			Good direction.	16	
			Open space in front of my flat.	13	78
	Bad	12	The windows are always closed.	11	
			Not good direction.	7	
			Not enough distance between blocks.	6	24
(Sound and heat) insulation.	Good	8	The flat is in the middle.	8	
			Shared walls.	5	
			Good insulation bricks.	3	16
	Bad	44	Lack of insulation materials.	32	
			Prefabricated concrete walls.	23	
			A lot of large openings.	16	
			The walls are not thick.	16	87

Safety.	Good	24	Strong structure.	14	
			Have added a steel main door.	12	
			Neighbours take care.	10	
			Safety staircases.	7	
			Good electrical insulation.	3	
			Easy fire evacuation.	2	48
	Weak	6	Have added steel grille for windows.	6	
			Can observe strangers.	6	12
	Bad	22	No doorkeeper.	12	
			Building materials are not good for fire resistance.	10	
			No fire fighting materials.	8	
			No exit doors.	6	
			Windows are not good protection.	5	
			Many thefts.	3	44
Maintenance.	Good	23	Good to protect the flat.	12	
			Flat keeps its appearance.	12	
			The paint is easily dirtied by dust.	8	
			Salt water damages the pipes.	5	
			Water leak from neighbour.	5	42
	Bad	28	Nobody looks after shared staircases.	17	
			It costs a lot of money.	15	
			Expensive materials.	14	
			Old flat.	9	55
Privacy.	Good	16	Balconies are enclosed.	14	
			Good design.	8	
			Good sound insulation.	7	
			There is a boundary.	3	32
	Bad	29	Little distance between blocks.	17	
			Unsuitable design.	15	
			Windows face each other.	11	
			Flats have shared walls.	9	
			Bad sound insulation.	8	50
Toilets.	Good	29	Good equipment.	17	
			Enough for family and guests.	16	
			Regular maintenance.	12	
			There is enough area.	9	
			Good design.	4	58
	Bad	22	A lot of humidity.	12	
			Not enough for family members	10	

			and guests.		
			Too narrow.	8	
			Not enough water.	7	
			Water leak from upper flat.	6	43
Kitchen and its facilities.	Good	19	Enough for family members.	12	
			I have added a balcony area to the kitchen.	10	
			The kitchen is separate from the living room.	7	
			Easy to clean.	5	
			Good equipment.	4	38
	Bad	33	Too narrow.	23	
			No store.	13	
			Bad design.	7	
			Stopped up sewage.	7	
			Not enough for celebrations.	4	
			Not enough for seating family members.	4	58
Living room.	Good	16	Separated from other rooms.	10	
			Suitable for family.	8	
			Far from guest room.	6	
			Good ventilation and light.	4	
			I have added balcony area to it.	3	31
	Bad	31	Too narrow.	20	
			Not enough for seating family members.	18	
			Bad design.	8	
			Used as bedroom.	6	
			No living room.	5	57
Guest room.	Good	22	Suitable area.	16	
			Separated from other rooms.	16	
			It has own toilet.	7	
			Good furniture.	4	43
	Weak	5	Its area is not generous.	5	
			It needs air-conditioning and good furniture.	3	
			Not enough for celebrations.	2	10
	Bad	24	Small area.	16	
			Bad sound insulation.	11	
			Not enough room for celebrations.	8	
			Bad windows.	6	
			It has not good furniture.	5	
			Bad design.	2	48
Bedrooms.	Good	19	Good privacy.	13	

			Enough for family members.	11	
			Suitable area.	8	
			Good design.	6	38
	Weak	8	Almost enough for family.	7	
			Need more area.	5	
			Bad sound insulation.	3	15
	Bad	24	Not enough for family members.	16	
			Unsuitable windows.	9	
			Unsuitable area.	7	
			Bad sound insulation.	6	
			Bad heat insulation.	5	43
Balconies.	Good	15	Help to ventilate the flat.	10	
			Protect windows from the sun's rays.	9	
			Improve the building elevations.	9	28
	Bad	34	Overlook the neighbours.	21	
			Collect dust.	9	
			Have small areas.	8	
			Used only for drying clothes.	6	
			Not used.	5	
			Weak points for burglars.	3	
			Overlook dirty places.	1	53
Store place.	Good	9	Have enough area.	6	
			Near kitchen.	4	
			Important.	3	13
	Bad	42	No store room.	28	
			Too small.	14	
			Lack of windows.	8	50
Garage.	Good	5	Enough area with good ventilation.	3	
			I added it.	2	5
	Weak	3	Reduced area of the flat.	2	
			Too small.	2	4
	Bad	43	No garage.	43	43
Lift and stair access.	Good	17	Comfortable.	9	
			Good material and easy to clean.	8	
			All neighbours take care.	6	
			The flat is on the ground floor.	5	
			Have suitable height.	3	31
	Bad	31	No lifts.	17	
			Dirty place.	12	

			Very noisy.	8	
			Lack of maintenance.	7	
			Narrow steps.	3	
			Bad lighting.	3	50
Windows.	Good	21	Look in all direction.	12	
			Easy to use.	7	
			Good design.	7	
			Enough distance between blocks.	6	32
	Bad	28	Overlook neighbours.	15	
			Have to be closed all time.	12	
			Small distance between blocks.	9	
			Big glazing area generates heat.	7	
			Bad design.	3	
			Bad materials.	2	
			Lets dust enter.	2	50

Table: 8. 25 Interviewees' opinion about aspects of their dwellings, their quality and reasons for that.

In this equation respondents evaluate the components and qualitative aspects that are related to the design of their flats. The responses are classified into good, weak and bad qualities (weak was added to the percentage of bad quality) and respondents provided several reasons for their evaluation (Table 8.25). The components that were mentioned as good are: natural lighting, 81%, ventilation, 75%, and toilets, 56%. While the bad qualities are: (sound and heat) insulation, 85%, garage, 83%, store room, 81%, balconies, 65%, kitchen and its facilities, 63%, bedrooms, 62%, living room, 60%, lift and stair access, 60%, visual privacy, 56%, guest room, 56%, maintenance, 54%, windows, 54% and safety, 54%.

The equation results show that the design of public flats has been successful in providing good hygiene needs such as natural light, ventilation and toilets for many of the reasons mentioned by the interviewees, such as large windows that are located in different directions that help to provide good ventilation or modern toilets with washable glazed tiles and modern toilet equipment. While the design failed in other aspects, like privacy, socio-culture and economic costs. Sound and heat insulation is the worst quality (85%) in the flats. The inhabitants suffer from a high temperature inside their homes, particularly in summer where the outside temperature sometimes reaches 44C°, due to bad building materials and poor insulation. To solve the problem inhabitants fixed air-conditioning units or fans in ceiling in their flats which generate health problems as well as noise and high electricity bills. Sounds are easily heard from

inside and outside the flats, particularly when prefabricated walls and ceilings are used, as in case studies 2 and 3 (Chapter Nine) where the thickness of the partitions walls (10 cm or less) lacks good insulation materials for economic reasons.

Libyan planning and building legislation has concentrated on hygiene needs from only a physical perspective by providing healthy spaces for users as do other western buildings and housing legislations (see Chapter Four) but it has neglected other needs which are more subjective that have had an indirect influence on hygiene needs such as overcrowding as a result of a lack of enough rooms to accommodate all family members. Most of the flats' spaces are evaluated as bad since some of them lack in the original design, such spaces as a store room and garage.

The store room and garage are very important spaces for Libyan families. In traditional Libyan houses the store room *Al-Makhzen* can be found in every house as a basic element to fulfil people's needs and they are used to store food, kitchen equipment, furniture and water (in underground water tanks) because Libya faced many blockades for long periods or faced rainwater shortages due to its geographic location which led to a lack of water and food, so for these reasons, the store room was definitely a space necessary to people's lives. Nowadays the necessity for a store place is still very strong, particularly to support people's lives at times of celebrations when there is a need for much kitchen equipment such as dishes, cooking pans, spoons…etc. Most families seek to have them in their home to show their status and hospitality and they require a store place to accommodate these facilities. A garage is another space which becomes necessary for Libyan families due to the major use of cars, the fast pace of modernisation and urbanisation and the lack of public transportation. The main need for a garage is to protect cars from the harsh climate and theft. The garage moreover, is used to store things, accommodate people and as an external kitchen in celebration events. In most Tripoli public housing, inhabitants are forced to add or modify some spaces in their dwellings and use them as garages (see Figure: 8.12 B). Planning and building legislation should take more consideration of this issue.

Q21- Give your opinion about the setback of your dwelling and mention (3) reasons for that view.

0pinion	Freq	Reason	Freq	Total
Good	12	Enough space in front of my block.	10	
		Good space for parking.	4	
		There is space for children to play.	4	
		Clean place.	4	
		Under control.	3	
		It is protected by a fence.	1	26
Bad	36	Small distance between blocks.	25	
		I can easily hear other people.	17	
		Place where rubbish gathers.	14	
		Lack of privacy.	11	
		Lack of place for children to play.	6	
		Lack of enough area for parking.	3	
		Heat source.	3	
		Main doors face each other.	3	
		Lack of green areas.	3	
		Place where teenagers gather.	2	87
Total	**48**			**113**

Table: 8. 26 The interviewees opinion about the setback and reasons for that view.

Out of 52 only 48 respondents gave their opinion about the distance between their dwelling blocks and neighbours. Table: 8.26 revealed that the majority of the respondents are dissatisfied with the distance (36). Because all the blocks are designed to be outward looking, for that reason the setback is required for ventilation and light for all spaces of the flats and the legislation is more concerned to provide a healthy environment inside the living spaces. Libyan planning and building legislation addressed this issue and mentioned it in specific codes where the setback is dependent on density, plot area and zoning (see Chapter Four). On the other hand, in Tripoli Old City as in other Islamic cities the houses are designed to be inward-looking by having a central courtyard which removes the need to have the setback. Having a setback in public housing leads to many negative aspects as mentioned by the interviewees, such as a lack of privacy and climatic problems, increasing heat, dust and wind. Some residents in Tripoli public housing case studies 1 and 3 occupied the areas around their blocks (that had come about as a result of applying the setback regulations) by building

walls or garages to use them as private spaces. In case study 2 the setback between the blocks was too small because the planners had applied the minimum setback requirement (3- 4m).

Q22- Mention 5 important qualities, aspects, or features you most like in Libyan traditional houses. Please give 2 reasons why they are important.

Features	Freq	Reason	Freq	Total
Courtyard.	25	Good for privacy. Good for ventilation and lighting. Place where multiple activities occur. Relaxes the mind. For green plants. Place for sleeping in summer.	14 10 9 7 6 4	50
Organisation of spaces.	22	Suitable for family. Future extension. Suitable for social customs.	19 14 10	43
Small outside windows.	8	Good for visual insulation. Not costly.	8 8	
Shared thick walls.	7	Suitable for local climate. Minimal maintenance. Use local material.	7 4 3	14
Having its own entrance.	7	Feel free. Privacy. Quiet.	6 5 3	14
Use of local materials.	7	Cheap. Use local sources. Natural material.	6 6 2	14
Squares.	6	Suitable for social customs. Places for children to play.	6 6	12
Arches (inside & outside).	6	Aesthetics. Islamic character.	6 6	12
Narrow streets.	5	Give shade to pedestrians. Control behaviour. Social environment.	5 3 2	10
High ceiling.	5	Good to disperse heat. Good ventilation.	5 5	10
The same building heights.	5	Sense of unity. Privacy. Consideration of human scale.	4 3 2	10
Libyan decoration.	5	Aesthetics. Increases value of the house.	5 4	9

Underground water tank.	5	Collects rainwater. Water will be always available.	5 4	9
Ceramic tiles.	3	Increases value of the house. Aesthetics. Easy to clean.	3 2 1	6
Mushrabiyah.	2	Provide privacy. Filters direct sunlight.	2 2	4
Cul-de-sacs.	2	Good for behaviour control. Good to observe strangers.	2 2	4
Total	120			240

Table: 8. 27 The interviewees' opinion of the 5 most important qualities they like best in Libyan traditional houses.

The answers to this question (Table: 8.27) show that the respondents mainly concentrated on evaluating the quality of the components of the Libyan traditional courtyard house and its layout and they gave reasons why they liked these features. The responses could be classified into: architectural elements, internal and external spaces and building materials. The architectural elements that provide good functional aspects are the courtyard, small outside windows, shared thick walls, arches, high ceilings, and buildings at the same height, underground water tank and *Mushrabiyah*. The internal and external spaces which are liked are the organisation of spaces, unshared main entrances, squares, narrow streets and cul-de-sacs. The building materials preferred are local materials, Libyan decoration and ceramic tiles.

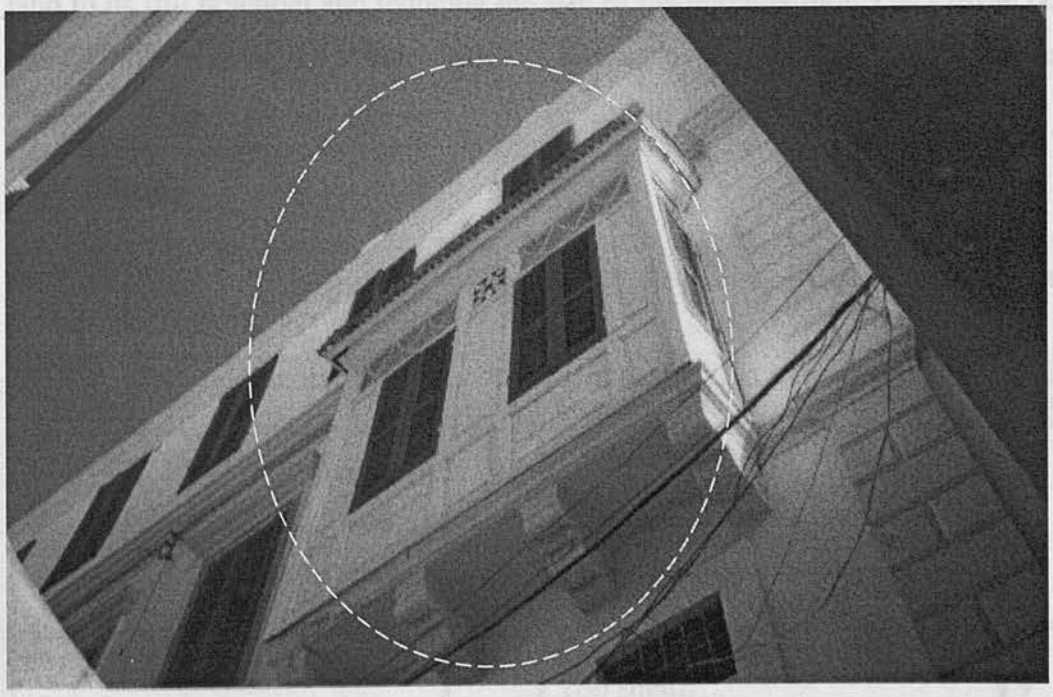


Figure: 8. 18 *Mushrabiyah* in Tripoli traditional houses. (Source: the author).

The courtyard is the main element (25) which is most liked by respondents. The courtyard, which locally is known as *wast-Alhawsh* is the most commonly used living space by all family members but mainly the women and children of the house and it works as the heart of the house, which links most family living spaces. Architecturally, the courtyard can be defined as a space that is surrounded by walls or spaces, which look inwards, from four directions and opens directly to the sky. The Libyan traditional house usually has one or two courtyards, according to the size of the house and the building plot, which depends on the economic status of the owner and it has different shapes, but mainly, it is square or rectangular. The courtyards range commonly in size from 3 x 4m to 8 x 10m. The courtyard height can be one or two storeys (see Chapter Three).

There are many reasons for having courtyards, including socio-cultural, economic and climatic. To enhance privacy inside the house is the main socio-cultural reason given by the interviewees in Table: 8.27 and the climatic reason is that the courtyard offers desired shade to the rooms in summer, while in winter, it offers a warm place mainly for women and children to sit and enjoy doing many activities, such as cooking, washing, chatting and playing since the courtyard protects them from cold breezes as well as offering daylight and natural ventilation to the surrounding spaces. Additionally, the courtyard, in its design, offers a number of economic advantages such as exploiting the land to its full potential and reducing the size of the building plot. The Libyan courtyard house, for respondents, has many advantages that satisfy the local cultural, environmental, economic and way of life of Libyan people (see Chapter Three).

Q23- Mention 3 things you do not like in the Libyan traditional houses. Please give 2 reasons for each.

Things	Freq	Reason	Freq	Total
Small rooms.	15	Traditional technique. Unsuitable for modern furniture. No use of concrete.	11 10 9	30
Unpaved narrow streets.	11	Unsuitable for cars. Source of pollution.	11 8	18
Organisation of rooms.	10	The doors face each other. Too small.	10 9	19

Sewage system.	8	Not connected to mains system. Increases pollution.	8 8	16
Compact buildings.	6	Prevents ventilation flow.	6	6
Traditional building technique.	5	Weak for multi storey building.	5	5
Lack of garages.	5	Not safe for cars.	5	5
Breeding animals inside houses.	4	Source of pollution. Unhealthy.	4 4	8
Total	**64**			**107**

Table: 8. 28 The interviewees' opinion about things they dislike in traditional houses and reasons for that.

When respondents were asked about the aspects they disliked in traditional houses, the answers were mainly concerned with physical issues such as the size of rooms, unpaved narrow streets, the organisation of rooms, the sewage system, compactness, building techniques, the lack of garages and having animals inside the houses, as was mentioned in Table 8.28. The main thing that dissatisfied respondents was the size of the rooms (15) in the traditional houses. Having rooms of a suitable size is very important for people, particularly to accommodate modern furniture and thus to display their prestige and social status to visitors. The availability of building materials and a technique that uses tree branches for the ceilings which have a limited width, usually between 2.50 to 3.00 metres, all contribute to the creation of small rooms as addressed in Chapter Three (see section 3.4.1). Respondents also disliked the lack of garages and unpaved narrow streets, as they are a source of dust due to extensive car use, particularly in Libya where public transportation is very limited.

In some traditional houses that have external courtyards, people have spaces called stables on one side of the court for breeding animals such as goats, sheep and hens to use them as a source of milk, meat and eggs to feed family members and visitors. Some respondents (4) maintained that they disliked this because it is a source of pollution, for example, from the bedding straw and that it is unhealthy or gives a bad smell. It is very difficult is accommodate this feature in new flats, in spite of its importance, particularly to Bedouin people, as it is a part of their way of life but the lack of open spaces, such as a courtyard in new flats, deters this practice.

Q 24- Would you like to say anything more about your house?

These are the recommendations distilled from the 29 responses given to Question 24:

-The dwelling should follow health and safety requirements.	11
-A garden, store and garage should be included in the Libyan dwellings.	9
-People's customs and way of life should be considered in the design.	7
-No more high-rise flats should be built for Libyan families.	6
-The distances between blocks should consider the residents' requirements.	5
-Local materials should be used.	5
-The dwelling design should sustain the environment.	5
-The dwelling should consider the local climate.	4
-The dwellings should not be more than two storeys high.	4
-The dwellings should have simplicity in their design.	4
-The dwelling design should include a place for children to play.	4
-The dwelling design should include the advantages of traditional houses.	4
-The dwelling design should allow for future extensions.	3

The question sought to invite any extra information that the respondents could highlight and which they believed might contribute to the subject. The answers were mainly focused on improving the quality of spaces within the dwelling. The improvements could be met by adding new spaces that would have good physical qualities to meet human needs, such as health and safety and that would consider the local climate, as well as considering people's socio-cultural background. The respondents mentioned that such a design could much improve the standard of spaces by simplicity, minimising the building height to two storeys and using local materials.

The most important thing referred to by some respondents (6) was that high-rise housing blocks should not be built any more for Libyan people, due to their many disadvantages, such as a lack of privacy, a lack of children's play areas, noise, smallness

of spaces, lack of maintenance and a lack of control which can force residents to modify their way of living.

8.9 PART C: Information about the neighbourhood

Q25- Mention 3 things you most like in your current neighbourhood. Give 1 reason for each.

Things	Freq	Reason	Freq	Total
Co-operation.	20	Social tradition. Feeling of belonging. It is our culture.	10 8 2	20
Commercial facilities and mosque.	15	Merchandise meets daily needs. Daily worship and religious celebrations. Social activities.	8 4 3	15
Health and education facilities.	13	Children's safety. Saving money.	9 4	13
Good relationship with neighbours.	11	Socially secure neighbourhood. Religious guidance.	6 5	11
Tranquillity.	10	Far from main roads. Mental relaxation.	6 4	10
Observing the traditions respecting.	9	Neighbours understand one another. Keeping good manners.	5 4	9
Open spaces and gardens.	8	Good for various activities. Places of pleasure. Places of beauty.	4 3 1	8
Neighbourhood association.	6	Social relations. Fewer social problems.	4 2	6
Safety	5	Good relations with neighbours. Good street lighting. Police station.	2 2 1	5
Total	**97**			**97**

Table: 8. 29 Things the interviewees most like in their current neighbourhoods and reasons for that.

Interviewees mentioned important positive aspects that they liked in their current neighbourhoods. These can be classified into two groups. The first group consists of aspects related to the relationship between inhabitants and their neighbours within the housing blocks or the neighbourhood, such as co-operation, good relations and association. These matters have deep roots in the customs, traditions and way of life of the Libyan people which they have inherited and which have a high value as well as

their being a direct reflection of Islamic teaching, such as support of poor people, visiting the sick, co-operation at sad and happy events and kindness to neighbours all aspects which bind Libyan society. The second group consists of matters that are related to the physical environment and which meet human needs, such as, health, education, religion, open spaces and gardens, and feeling secure and safe within neighbourhoods *mahalaht* as stated in Table: 8.28.

Co-operation is the main aspect (20) that was mentioned by the respondents. There are many aspects which show how co-operation is met by neighbours such as looking after children when their parents go out to the markets, or hospital visiting as well as giving their flats to their neighbours in happy or sad events, borrowing different things from each other and preparing food for their neighbours when becoming ill. The spatial configuration of internal and external spaces within housing and mixed use can highly contribute to strong co-operation between people by increasing social interaction that binds people together. These can occur in different spaces such as courtyards, streets, alleys, cul-de sacs, mosques, play areas and markets. It was mentioned and addressed early in Chapter Seven (space syntax), the significance of good design of these spaces to enhance the relationship between users within the aforementioned spaces. Planning and building legislation can play an important role in formulating the spaces to fulfil co-operation between people.

Q26- Mention 3 things you dislike in your current neighbourhood. Give one reason for each.

Things	Freq	Reason	Freq	Total
Lack of infrastructure.	13	Source of pollution. Cause of illness. Psychological, causes stress.	7 4 2	13
Lack of paved streets.	8	Gather litter. Bad for cars.	6 2	8
Noise	6	Near ring road. Lack of good sound insulation materials. Children play noisily.	3 2 1	6

Different customs.	6	Different way of behaviour. Moral disunity.	3 3	6
Lack of privacy.	6	The windows face each other. Customs not respected.	3 3	6
Mixed (single and married) blocks.	5	Customs not respected. Culturally inappropriate planning.	3 2	5
Little distances between the blocks.	5	Lack of privacy. Gather litter.	4 1	5
Inadequate street lighting.	4	Lack of safety. Increases risk of crime.	2 2	4
Illegal building.	4	Spoils the view. Add pressure to the infrastructure.	3 1	4
Too few schools.	4	Children must cross greater distances. Additional money for transportation.	3 1	4
Lack of children's play areas.	3	Children's use of streets as a playground. Lack of playing facilities.	2 1	3
Blocks far from mosque.	3	Make it difficult for people to go daily to the mosque.	3	3
Congestion.	3	Increased traffic problems.	3	3
Far from city centre.	2	Feeling of isolation.	2	2
Lack of cooperation.	2	A lot of problems caused. Feeling of isolation.	1 1	2
Lack of gardens.	2	Bad influence on living environment. More dust.	1 1	2
Few shops.	2	Bad effect on social relations. Forces people go outside the neighbourhood.	1 1	2
Lack of places for older people.	1	Feeling of isolation.	1	1
Total	**79**			**79**

Table: 8. 30 Things that respondents disliked in their neighbourhoods and reasons for that.

The answers to this question (Table: 8.30) raise some important issues. When something is missing, it causes problems for the inhabitants and blocks their expectation of their neighbourhoods and it becomes an obstacle to their achieving their desires. These issues have a negative affect on all families' members needs, such as safety, a lack of

infrastructure facilities, privacy, health, religious, education and social interactions. The lack of infrastructure facilities is the main issue (13) that was mentioned by respondents. This lack includes the discontinuity of the water supply, sewage treatment which should be connected to the main sewage system and which becomes a source of pollution and may cause health problems, particularly for elderly people and children as was the issue in case study 3, *Hay Enjela* housing. Some of these issues are classified as basic human needs (see Chapter Five).

A lack of sidewalks and non-paved streets are another issue which interviewees disliked in their current neighbourhoods and which was clearly observed in case study 2, *Hay 2 march* (Chapter Nine), where the inner street paving and sidewalk work has not been completed yet and this has a direct negative consequence for inhabitants, such as car damage, dust pollution, difficulty for children to walk, particularly in winter, when the rainwater collects in these streets and they become flooded. Moreover, these streets become places where rubbish gathers creating environmental pollution. These issues have a direct negative impact on people's health and they increase the money spent on car maintenance and physical health treatments. These issues are discussed in Chapter Six (sustainable development).

Noise was mentioned as an issue of concern to people within public housing. Noise is defined as unwanted sound and has a direct relationship to children, the number of occupants, location, neighbours, windows, doors, frames and construction materials. Noise may come from neighbours, road and air traffic or industrial sources. Noise has many negative influences on human health and many countries have addressed this issue in their regulations, particularly with regard to the built environment by controlling traffic speeds and preventing car alarms near hospitals, schools and a reduction in their use in residential areas.

Noise level	**The influence on the human ear**	**Source of noise**
0 db	Totally quiet.	Lack of sound source.
Up to 30 db	Quiet.	
At 50 db	Starting to feel disturbance on conversation.	Low sound.

	Sleep disturbance.	Low traffic.
At 75 db	Very noisy, should be well protected from.	Telephone bell.
At 140 db	Ear harm with possible loss of temporary hearing.	Air traffic.
140- 170 db		Explosion.

Table: 8. 31 The influence of different noise on the human ear. (Source: Al-Falah, 2001: 58).

The most commonly heard type of noise that was mentioned by respondents was from road traffic, such as was shown by the situation in case studies 1 and 2 Tripoli public housing, where the housing is located close to motorways that have high speed vehicles, (see Table: 8.30 and Chapter Nine). Moreover, the structure and layout of the housing determines how well sound is transmitted from outside or from adjoining properties. In Tripoli public housing, noise from outside is exacerbated through the use of big windows with a single pane of glass and which have prefabricated walls that have less sound insulation, as in case studies 2 and 3 Tripoli housing.

However, sounds in traditional Arab cities, Tripoli Old City is one of them, can be evaluated positively, which give specific places their own identity and become easily absorbed by people. As Abdalla (1998) points out, in a city, in the daily life, one can hear several voices, from waking up in the early morning until evening, particularly at the markets, one can hear different sounds such as work songs, distinct to each craft, composed of the rhythmic tapping or hammering or swaying of the craftsman.

Fewer streetlights, mosques that are far from residents and a lack of places for elderly people to meet are other important issues which the respondents disliked about their current neighbourhood. These issues have a direct negative influence on people's way of life, such as reducing their social interaction, decreasing the daily frequency of times when they go to the mosque, which is very important in Islamic teaching as it is a religious requirement, for prayers and it leads to the social exchange of news and to resolving their shared problems. Fewer streetlights can contribute to crime, whereas good streetlights can contribute to people feeling safe in external spaces, as Maslow's model shows, as well as how it can be addressed by space syntax (which is considered in Chapter Seven). These issues are clearly considered in the layout of traditional housing as is evident in Tripoli Old City where the mosques are distributed within

walking distance of most residents and there are places for elderly people to chat, meet, discuss ...etc. and these are provided on city streets and near mosques. On the other hand, new public housing has failed to respond to these important needs in their external spaces. Libyan legislation should deal with these key issues in order to achieve sustainable neighbourhoods.

Q27- Mention 3 things you would like to have in your neighbourhood in the future. Give 2 reasons for each.

Things	Freq	Reason	Freq	Total
Gardens with children's play areas.	19	For children to play and as leisure places. To reduce dust. To absorb smoke. Good for mental relaxation.	17 9 7 5	38
Complete infrastructure (roads, sewage, lighting, electricity, water etc.).	15	Upgrade neighbourhood status. Protect the environment. Reduce pollution. Decrease illegal building.	13 9 4 3	29
Mosque with multipurpose halls.	9	For religion. For celebrations. To improve people's behaviour.	7 6 3	16
General cleanliness and maintenance.	6	Good appearance. Improve the neighbourhood.	6 6	12
Safe parking and paved streets.	6	Stop cars parking on pavements. Protect cars. Less street congestion.	6 5 1	12
Provide working places in the neighbourhood.	5	Give stability for people. Give life to the neighbourhood.	5 5	10
Good social connection.	5	Observance of customs. Enhance relationships between neighbours. For more social safety.	5 4 1	10
Good privacy.	4	More relaxing for living. Enhance social unit.	4 4	8
Good transportation.	4	Reduce time for transport. Make travel easier.	4 4	8
Compact planning.	3	Suitable for climate. Good for privacy. Good for social communication.	2 2 2	6

Suitable distances between blocks.	3	For privacy. Less noisy.	3 3	6
Street lighting.	3	For safety. For children to play safely. For night chats.	3 2 1	6
Places for older people.	2	Good for family unity. Responds to human need.	3 1	4
Good landscape.	2	Good view. Good for mental relaxation.	2 2	4
Tranquillity.	2	Mental relaxation. Save time.	2 2	4
To have night safeguard.	1	For safety.	1	1
Open market.	1	For shopping. For social relations.	1 1	2
Total	**90**			**176**

Table: 8. 32 Future things respondents would like to have in their neighbourhoods.

In their answers to this question (Table: 8.32) respondents mentioned aspects that are missing from their current neighbourhoods and a clear picture about the situation in their neighbourhoods emerged. The matters that the interviewees would like included in any included future neighbourhoods can be divided broadly into four categories:

1. Matters that are related to basic needs, such as safety (street lights, night safeguards and safe parking areas) and privacy needs (suitable distances between housing blocks). These things are very important for all people as mentioned in (Chapter Five) and addressed within many theories. Tripoli public housing failed to respond to these basic things such as the case of high-rise blocks in case study 1 where the twelve storey blocks are overlooked by the eight and four storey blocks (see Figure: 8.19) and in case study 2 where the distance between housing blocks are close so that causes a lack of privacy.

Figure: 8. 19 Twelve storey blocks overlooking the four storey blocks in Tripoli case study 2. (Source: the author).

2. Matters related to socio-cultural needs which can be fulfilled within different physical spaces at neighbourhood level such as: mosques with multipurpose hall, places for elderly people and open markets as mentioned above. These matters are one of the human needs that lead to having strong social relationships between inhabitants. It is not only the availability of these spaces within neighbourhoods' layouts that can fulfil the socio-cultural needs but also the way these spaces are organised.

3. Matters that are related to economic and climate issues such as: compact buildings, good transportation, paved streets, work places in the neighbourhoods and open markets. These matters are important for inhabitants to sustain them and for them to want to remain in their neighbourhoods and a lack of these matters can create lots of problems, as well as can be a strong factor for pushing them out to move from their neighbourhoods. The significance of these matters was addressed in Chapter Six (sustainable development).

4. Matters that would improve the aesthetics and hygiene of neighbourhoods such as: good landscape, tranquillity, gardens and children's play areas, general cleanliness and maintenance and complete infrastructure. These are main aspects which lead to a comfortable life and enhance the felling of belonging to the place as was discussed in Chapter Five.

Q28- Are you satisfied with the standard of facilities provided in your neighbourhood (water, electricity, etc.) Yes/no? Give 3 reasons why.

Satisfied	Freq	Reason	Freq	Total
Yes.	11 21.15%	Good electricity. Enough water. Good sewage system. Telephone connection available. Good maintenance.	11 8 6 2 2	29
No	39 75%	Discontinued water. Sewage overflows. Maintenance needed. Lack of street lights. Lack of rainwater drainage. A lot of litter. Lack of paved streets. Lack of underground electricity.	30 25 14 9 9 8 7 6	108
Total	**50** **96.15%**			**137**

Table: 8. 33 Evaluation of neighbourhood's facilities.

From 52 interviewees, two did not respond to the question. The majority were dissatisfied with the facilities that are provided in their neighbourhood (75%). The main issue they mentioned is the discontinuity of the water supply (30) which was clearly observed in case studies 2 and 3 of Tripoli public housing where the inhabitants were forced to use galvanized water tanks (1 to 2 cubic metres in size) to store water and use them when the water supply was discontinued. The tanks are located on the ground level or on the roofs of the block of flats using small water pumps, which adds another source of noise. In *Hay Enjela* case study 3, the municipal water supply runs only 1 to 3 days a week, hence people buy water from trucks that carry water tanks. The second reason for dissatisfaction is the overflow of sewage (25). This was mainly found in *Hay Enjela* (from field observation) where the sewage pipes are not connected to the main sewage main system. To reduce this situation, the inhabitants are forced to put septic tanks near their housing blocks on the ground.

Maintenance is another important issue that was mentioned by some respondents (14). This can contribute to increasing the quality of the housing space as well as promoting a sense of belonging and esteem and it can even enhance other aspects, such as the feeling

of personality as mentioned by Maslow (1987). Well-maintained neighbourhoods make their residents feel they are themselves valued. The housing policy in Libya (1970-90) helped to provide an enormous quantity of dwellings and let the residents own them, which led to the residents taking care of their dwellings. Only the shared facilities, such as streets, public spaces, street lights, staircases and lifts were left to local authorities with limited finances, thus most of the lifts, street lights and public spaces are in a poor condition and in need of repair.

Planning and building legislation in Libya should study with more care the significance and availability of public facilities in neighbourhoods because lack of such facilities causes many problems for inhabitants and decreases the standard of the quality of spaces and could be a strong reason which makes the residents move from their neighbourhoods.

Q29- Mention 3 important things you miss from the past which would improve your neighbourhood. Give 1 reason why they are important.

Things	Freq	Reason	Freq	Total
Narrow streets, cul-de-sacs and squares.	17	Places where children play. Control behaviour. Suitable for celebrations. Suitable for climate.	6 5 5 1	17
Markets and mosques.	13	Social meetings. Spend leisure time. Religion celebrations.	6 4 3	13
Co-operation and respect.	12	The neighbours know each other. Respect of customs.	8 4	12
Privacy.	12	Religious principles and rules. Relaxation.	7 5	12
Relatives live in the same neighbourhood.	11	Increasing social ties. More tranquillity. Control behaviour.	5 4 2	11
Controlled building design, material and height.	9	Give neighbourhood identity. Suitable for climate. No damage to the environment.	5 3 1	9
Cleanliness.	8	Good appearance and health.	8	8
Places for older people.	6	Addresses neighbourhood problems. Human needs. Good for social ties.	4 1 1	6

Having all infrastructures.	6	Good for residents' comfort.	6	6
Public transportation.	4	Good and cheap transport. Less pollution.	3 1	4
Places for teenagers.	3	To have more friends. For play.	2 1	3
Greenery and water.	2	Mental relaxation.	2	2
Total	**103**			**103**

Table: 8. 34 Things that interviewees miss from the past and reasons why they are important.

When asked about things from the past that could improve current neighbourhoods, narrow streets, cul-de-sacs and squares between the houses are the main things (17) that were mentioned by respondents. These are the things which characterise most traditional Islamic cities, as in Tripoli Old City and these aspects respond successfully to suit people's socio-cultural as well as climatic conditions. The narrow streets (alleys) play an important role in Islamic cities as mediating spaces which fall between the internal and external orders of life and function as overlapping semi-private /semi-public spaces. The width of alleys is subject to its function in residential areas but should not exceed 2 m as a result of the implication of Islamic law (Mortada, 2003:82). These alleys, which are normally shaded, provide the opportunity for face-to-face interaction between people due to their being used for walking and where usually, one can see children, elderly people, women (mainly in the morning when men have gone to their work) and young people mixing together, walking, chatting and playing in a safe situation, and one which supports the principle of strong social interaction.

The spatial hierarchy of streets that provide a clear separation between private and public life is the significant thing that people miss in their current public housing in Tripoli due to the implementation of building and planning legislation and the adoption of the western concept of neighbourhood where the streets become wider and are mainly constructed for cars. Cul-de-sacs and squares are the places which neighbours use for gathering at celebrations such as weddings and festivals, moreover they are suitable places for children's play areas and are considered to be an extension of the house's private space.

Mosques and markets are the second important thing that respondents refer to (13). The mosque is defined as the place where a Muslim worships and expresses his belief in the

unity of God, five times a day through prayer. The role of the mosque is not limited to its religious function, in fact the mosque has a social purpose that unites Muslims within the community and strengthens their social relationships (Mortada, 2003:87). The mosque is a symbol of identity, unity and equality (rich and poor, weak and powerful). In the traditional Muslim environment, the mosque achieved the ideal use by serving as a multi-purpose space for prayers, education, political decisions, and several celebrations. In most Libyan cities the places near the mosque are the preferred places for elderly people where they gather to chat, exchange news, reply to any strangers needs and observe children to control their behaviour, while awaiting prayers. Mortada (2003) points out that mosque building in traditional cities was done in hierarchical order by size, and according to their location, service zone and walking distance. The small one is called *Masjid Alawkat* and is the daily mosque, mainly located in every residential area in a semi-private/ semi-public zone within easy walking distance (150-200m) and is mainly used by local people for daily prayers and sometimes for teaching children. The second one is called *Masjid Aljomah,* the Friday mosque where Friday prayer occurs every week or it may be called *Masjid Aljama* which means that it has many purposes, such as a library, meeting hall, large courtyard and classrooms as well as being located mainly in public streets where it is used by local people and Muslim strangers (visitors, passers-by) and within walking distance (250-300m). The third one and the largest, is called *Mussalla* and is used mainly for religious celebrations and for special prayers, such as when people ask God to give them rainwater or for general meetings to discuss matters of concern to everyone and it is located in residential districts or out of cities. For all these reasons, mosques should be provided in every residential area.

Markets play an important role in enhancing economic and social interactions that can minimise people's isolation from each other. Markets are places were people gather, chat, meet each other and enjoy good times. In traditional cities, Islamic law had a major contribution to make in organising the market within a city's layout, according to what kinds of activities were happening in them, as mentioned in Chapter Four. The main criteria of their organisation was to prevent harm. Different kinds of markets, such as covered markets, open markets and strap markets with small shops and accessible to residents and strangers are found in Tripoli Old City. On the other hand, in the new housing projects residents suffer because such places do not exist and they are

forced to build illegal small strap shops and to have open markets, such as in the case studies 2 and 3 to fulfil their needs.

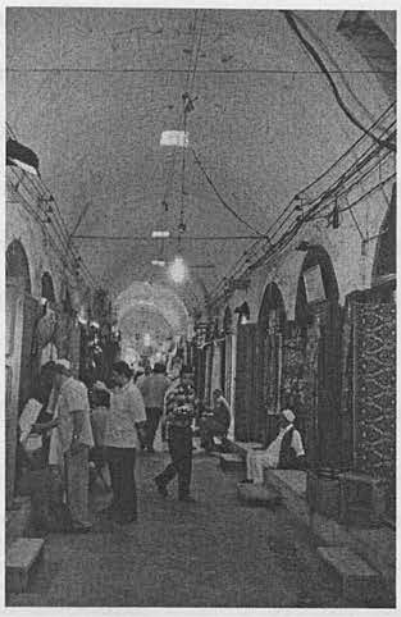



Figure: 8. 20 Covered market in Tripoli Old City. (Source: the author).

Q30- Are you satisfied with the children's playing areas in your neighbourhood Yes/no? Give 2 reasons why.

Yes/No	Freq	Reason	Freq	Total
Yes	4	Availability of open spaces.	3	
		Far from main roads.	1	
		Play near the flat, easy to watch.	1	5
No	46	Lack of play areas.	33	
		Children use streets as play areas.	13	
		Dangerous areas near main roads.	9	
		Children play in unclean places.	7	
		Small flats, no area for playing.	7	
		Far from the flat.	3	72
Total	**50**			**77**

Table: 8. 35 Satisfied with children's playing areas in neighbourhoods.

The majority of respondents (46) in this question are dissatisfied with the children's playing areas in their neighbourhoods as Table 8.35 shows while only 4 out of 50 are satisfied with the children's playing areas which may be due to their having less children in early ages and they live in ground-floor flats where they can easily watch their children when they play outside or their housing blocks are far from road dangers.

Many reasons are given for both answers. Lack of specific play areas are the main reason (33) for dissatisfaction in the three Tripoli housing case studies. As mentioned by interviewees, children use the streets as play areas due to the lack of special play areas and this situation can lead to many car accidents, particularly for children who play in the main roads. A lack of play areas within neighbourhoods and insufficient facilities leads to children playing in any empty available areas which might be unclean. Playing is a basic need for children and they will seek to gratify it anywhere. This situation can lead to them having health and safety problems.

Q31- Mention 3 reasons that have motivated you to stay in your neighbourhood.

Reason	Freq	Percentage
Good relations with neighbours.	17	16.83%
Lack of good alternatives.	17	16.83%
Good transportation.	10	8.90 %
Safety.	8	7.92 %
Good collaboration between neighbours.	8	7.92%
Near work place.	7	6.93%
Near markets and mosques.	7	6.93%
Good facilities (infrastructure).	6	5.94 %
Neighbourhood near the city centre.	6	5.94 %
Tranquillity.	5	4.96%
Good social relations.	4	3.96%
Relatives live in the neighbourhood.	3	2.97 %
Good streets and green areas.	2	1.98%
Suitable cost for the flat.	1	0.99%
Total	**101**	**100%**

Table: 8. 36 Reasons that motivated respondents to stay in their neighbourhoods.

The respondents mentioned (14) reasons that have motivated them to stay in their neighbourhoods. There are two main reasons that are given frequently (17), good relationships with neighbours and the lack of good alternatives. The relationship with neighbours plays an important role in how people are motivated to stay in the same place and to feel a sense of belonging. The design of dwellings and their layout could contribute and enhance this relationship. In the old city of Tripoli, the organisation of spaces within the courtyard houses and the planning of external spaces, such as streets' hierarchy, public spaces, mixed usage, shaded spaces for sitting and chatting, proximity

of workplaces and having alleys for walking, all of these reflect positively on having a good relationship between residents, as illustrated by space syntax theory and method (see Chapter Seven for more details). Planning and building legislation in Libya can contribute to enhancing the relationship between inhabitants by having codes which would address the above issues. Lack of a good alternative (17) is another reason that motivated some interviewees to stay in their neighbourhoods. From this reason it can be understood that the respondents are dissatisfied with their neighbourhoods and forced to stay in them until they can afford to move to better neighbourhoods or their neighbourhoods get improved. Other reasons such as safety, proximity to workplace, the availability of: markets, schools, mosques and other utilities are important issues that enhance people's enjoyment and their wish to stay in their neighbourhoods (see Table: 8.36).

Q32- Mention 3 reasons that could motivate you to move from your neighbourhood.

Reason	Freq	Percentage
Lack of (maintenance, schools, markets, act).	16	34.00%
The flat is too small.	15	31.91%
The weakness of the relationship between neighbours.	10	21.28%
Bad transportation.	9	18.15%
Lack of leisure places.	7	14.89%
Pollution.	6	12.77%
Noise.	6	12.77%
Incomplete infrastructure.	6	12.77%
The status of the neighbourhood.	6	12.77%
Lack of privacy.	6	12.77%
Faraway from city centre.	5	10.64%
Faraway from work place.	5	10.64%
Overcrowding.	4	8.51%
High monthly instalment.	4	8.51%
Good alternative.	4	8.51%
Feeling of poor safety.	4	8.51%
Distance from relatives.	3	6.38%
Problems for my children.	2	4.26%
Poor water supply.	2	4.26%
Feelings of isolation.	1	2.13%

Table: 8. 37 Reasons that would motivate respondents to move from their neighbourhoods.

The respondents mentioned several negative reasons that would motivate them to move from their neighbourhoods. These reasons are the result of the bad planning and design of neighbourhoods and can be classified into: basic needs, environmental, social relations, and economic reasons. The main reason (16) is the lack of utilities in the neighbourhood, such as schools, markets, play areas, regularly maintenance…etc. These utilities are very important for inhabitants to be settled in their neighbourhoods and any lack or shortage of them can be a strong factor that could motivate them to move from their neighbourhoods.

Q33- Mention 3 difficulties you face from the location of your neighbourhood. Give 2 reasons for each.

Difficulties	Freq	Reason	Freq	Total
Lack of infrastructure and facilities.	27	Less water. Lack of good transportation. Fewer markets. Less maintenance. Bad sewage system. Fewer administration buildings.	14 9 8 5 5 5	46
Feeling of isolation.	12	Far from city centre. Weakness of the relationship between neighbours.	12 7	19
Social reasons.	10	Distance of the flat from other parts of the family. Weakness of the relationship between neighbours. Different social customs between residents.	8 6 5	19
The noise.	10	Near main road. Overcrowded with people. Bad insulation materials.	9 5 4	18
The neighbourhood is far from work place.	9	Lack of work places within my neighbourhood. Bad transportation.	9 4	13
Overcrowding.	7	Congestion on roads. A lot of people. Lack of parking places.	7 4 3	14
The dirtiness	7	A lot of litter. Lack of paved streets.	7 6	13
Dustiness.	5	Lack of paved streets. Lack of green areas.	5 4	

		Bad planning.	1	10
Lack of leisure places.	5	None in the neighbourhood. Bad planning.	5 5	10
Lack of privacy.	4	Gradual erosion of spaces from private to general. Bad layout.	3 3	6
Future extensions.	3	Bad layout. No enough areas for extensions.	3 2	5
No difficulties.	2			2
Total	**101**			**175**

Table: 8. 38 Difficulties respondents face from the location of their neighbourhood and reasons for that.

The respondents emphasised some of the physical, social, cultural and environmental issues that make difficulties for the users (Table: 8.38). These issues arose in some other responses of this questionnaire which seem to be very important for people and should be given more consideration when choosing the location of future housing neighbourhoods. The location of housing projects plays an important role in the degree of satisfying users' needs either negatively or positively as mentioned in Chapter Seven (space syntax). Choosing locations far and segregated from the city centre and out of or at the edges of master plans, such as in Tripoli public housing case studies 1 and 3, can deprive residents of public utilities and cause many problems, such as a lack of infrastructure due to its cost, lack of proximity to the work place and feelings of isolation from relatives, as was mentioned by some respondents. Planning and building legislation should address the significance of the location to avoid many problems that could occur from the segregation of neighbourhoods.

Q34- Mention 3 good characteristics in housing estates generally in Libya.

Characteristics	**Freq**	**Percentage**
Cheap price.	20	40%
Ready accommodation.	15	30%
Good collaboration between neighbours.	14	28%
Close to general utilities.	11	22%
Ready land.	10	20%
Open spaces for celebrations.	8	16%
Feeling of equality.	8	16%
Easy to change house by selling and buying.	6	12%

Helps to solve housing crisis.	6	12%
Good to know a lot of people.	5	10%
No characteristics.	5	10%
Easy to distinguish.	5	10%
Most of them are inside planning areas.	4	8%
Suitable instalments.	4	8%
Easy to know the strangers.	2	4%
Safety.	1	2%
Total	**124**	

Table: 8. 39 Good characteristics in public housing estates in Libya.

Respondents mentioned (16) characteristics seen by them as good in housing estates in Libya. The main characteristic is the cheap price (20) where Libyan law let the occupiers own their flats or houses by a rent-to-buy system. This system lets the owners pay a small amount of money monthly, usually not more than quarter of their salary, which make the public housing flats affordable for most of the people. The public houses are economically suitable for most people due to their being produced in massive quantity with typical dimensions which helps to solve the shortage of housing, as mentioned by some respondents (6) and the cost of the housing land does not add to the total cost, where the land is very costly, particularly in cities where people on low- and medium income face difficulty in buying such lands. Some respondents (8) mentioned that public housing made them feel equal due to their living within a typical design. This could be a positive advantage and might lead to psychological satisfaction.

Q35- Mention 3 problems in housing estates generally in Libya.

Problems	**Freq**
Lack of public utilities.	12
Overcrowding.	11
Segregated social/cultures.	10
Unsuitable design.	10
Small flat unsuitable for a family.	9
Noise.	9
Less care taken of outside cleanliness.	9
Bad layout.	9
Bad for elderly people, flats on high storeys lack lifts.	8

Lack of privacy.	7
Unsuitable materials for climate.	6
Lots of crime.	5
Lack of garages.	3
Lack of separate entrances.	3
Difficulty to have future extension.	3
Lack of differences in elevations.	3
Lack of children's play areas.	3
Lack of special places for celebrations.	2
Total	**122**

Table: 8. 40 Problems in public housing estates in Libya.

Only 46 interviewees give their response to this question due to its having a critical characteristic and some respondents dislike criticising the estate projects and they claim that it has sensitive issues. The respondents mentioned several problems (18). The problems are mostly reflected from the implementation of the design and layout of the public housing. The problems could be classified into: physical, socio-cultural and environmental (see Table: 8.40).

The physical problems are the lack of public utilities, internal spaces are unsuitable for family members, lack of garages, difficult to have future extension, unsuitable materials for climate and flats on high storeys with a lack of lifts. These problems are as a result of adopting a strategy that is more concerned about quantities rather than qualities of spaces, for mainly economic reasons and the absence of appropriate planning and building legislation where these important issues are not addressed, as was mentioned in Chapter Four.

The socio-cultural problems are overcrowding, segregation of social relations, lack of privacy, lack of children's play areas and lack of special places for celebrations. The environmental problems are noise, less care taken for outside cleanliness, and bad layout. The main problem that has the highest percentage is the lack of utilities (12).

Q36- What kind of transportation do you use to go from and to your work? Give 2 reasons why.

Kind of transport	Freq	Reason	Freq	Total
My own car.	31	Lack of public transportation. Work place is far from the neighbourhood. Lack of company car. Freedom in transport. Fast and comfortable.	18 14 9 7 7	 55
Taxi	14	Lack of public buses. I do not own car. Safety and availability. Fast.	10 10 2 1	 23
Company car.	2	Work place is far from the neighbourhood. Free and fast transportation.	2 2	 4
Walking.	2	Work place is near my flat. Good as exercise.	2 2	 4
Total	**49**			**86**

Table: 8. 41 Kind of transportation the interviewees use to go from and to their work.

Table: 8.41 shows that the majority of the respondents use their own cars for going and coming back from their workplace (31) others use taxis (14) or the company transportation (2) and present different reasons for that. Only two respondents go to their workplace on foot because their workplace is close to their flats. These responses reflect that there are shortages of workplaces within these housing projects. Most Tripoli public housing neighbourhoods are designed far from workplaces and located at the edges or out of the master plan of the Tripoli city thus forcing inhabitants to use different transportation, mainly their own cars for going to workplaces and other necessary journeys.

The kind of transport and the distance to and from the work place plays an important role in sustaining the environment. The increasing use of own cars, leads to more pollution, more noise, less social interaction...etc. Many studies have discussed the impact of this phenomenon, such as Williams and Green who in their study indicate that there are many negative traffic impacts, such as reduced safety for other car users, pedestrians and cyclists, vibrations, noise, air pollution, fear (particularly for children),

the prevention of movement in places, invasive parking and environmental damage and degradation (Williams and Green. 2001:7).

Providing workplaces within neighbourhood layouts, good public transportation systems to serve people who rely on it as their primary mode of travel, such as the young, those without personal cars and the elderly, as well as choosing the right location of housing projects, enhanced by planning and building legislation which considers the importance of sustainable development (see Chapter Six) could help to avoid many negative traffic impacts.

Q37- Mention 3 means to reduce your travelling time to and from your work.

Means	Freq	Percentage
Regular public transportation.	26	57.78%
Work places inside the neighbourhood.	18	40.00%
Trains and underground systems.	15	33.33%
Good motorways.	14	31.11%
Less congestion with good traffic lights.	8	17.78%
Company provides buses from work places.	7	15.56%
Make cars cheaper to own.	6	13.33%
Move to accommodation near work place.	3	6.67%
Using motorcycles and bicycles.	1	2.22%
Total.	**98**	

Table: 8. 42 Suggestions to reducing travelling time to and from work place.

Respondents introduced several suggestions to reduce travelling time to and from the work place as shown in Table: 8.42. These suggestions could be classified into two groups: group one is concerned about improving the transportation system (regular public transportation, to have trains and underground systems, to have good motorways, companies to provide buses to and from work places). Group two is concerned about improving the planning of neighbourhoods, such as providing work places inside neighbourhoods and moving to accommodation near to are work place.

The main suggestion is to have regular public transportation (26), such as public buses. Using public transportation can play an important role in reducing personal car usage, which would have many positive advantages as well as lead to less travelling time, less negative traffic impacts and increase the opportunity for social interaction between people and make more friendships due to their being more people in one space, such as on a bus at a regular time, meeting, chatting, exchanging news and being familiar to each other. This could help to achieve good social ties. The second important suggestion is to provide workplaces within neighbourhood layouts (18) which would reduce the travelling time and keep negative traffic impacts to a minimum.

Q38- Would you like to say anything more about your neighbourhood?

Only 22 responses were given to this question. The following points summarised the answers.

Take more care providing gardens and children's playgrounds.	12
Provide services at the neighbourhood level will save time and money.	9
Preserve the spirit of co-operation between residents.	8
Add celebration halls to the neighbourhood.	6
Keep housing away from the main road.	5
Respect privacy in planning and design of housing.	4
Reduce the number of storeys of the blocks.	3
Provide suitable building materials that respect the environment.	2
Total	**49**

8.10 PART D: Information about the city

Q39 - Do you have easy access to city life from where you live Yes/no? Give 2 reasons why.

Yes/No	Freq	Reason	Freq	Total
Yes	20 (38 %)	Not far from city centre. Good transportation. Good roads.	18 12 8	38
No	32 (62 %)	Far from city centre. Lack of public transportation. Need a lot of time. Lack of good and fast streets.	21 20 8 7	56
Total	**52**			**94**

Table: 8. 43 Access to city life from where the interviewees live.

Answers to this question divided the respondents into two groups. Group one respondents were those who said yes to having good access to city life (20) 38%. Group two respondents were those who said no to having easy access to city life (32) 62%. Access to city life can be considered as important for most people and the location of neighbourhoods where people live as well as transportation links, play an important role in making people less segregated because usually, the city centre is the heart of any city where you find several things that people need, such as commerce, social places, public offices, institutional services, leisure places…etc. Good links to the city centre that make it easy to reach, either by a good street network using public transport or by walking and leading to reduced travel time, are the main reasons to make it liveable, busy, safe and active for people, as was discussed by space syntax (see Chapter Seven).

The reasons that were mentioned by the respondents are very important, such as the location of the neighbourhood being far from the city centre (21), as in Tripoli case studies 3 and 1 and the lack of public transport (20), where inhabitants feel isolated from city life. The respondents who said yes (20), said they have good access to the city due to good transport or they are not far from the city centre, as in Tripoli case study 2. Adequate transportation systems are needed to provide necessary mobility for the neighbourhoods' inhabitants.

Q40- Give 3 thoughts on the relationship between your neighbourhood and the city.

Only 20 responses came from this question.

Opinion	Freq	Total
Neighbourhoods should connect to the city centre with a good network of streets and transportation systems.	13	
Neighbourhoods should be seen as an extension of the city.	10	
Neighbourhoods should function as a small city.	7	
Neighbourhoods should be an outlet for the city.	6	
The neighbourhoods should have good access to leisure places in the city centre.	6	42
Total		**42**

Table: 8. 44 The interviewees' suggestions about the relationship between their neighbourhoods and the city.

Interviewees made several suggestions that can be related directly to the planning of the city (Table: 8.44) and could be addressed within a legislation context. The main suggestion is to have a good transport system and the city centre should connect with a good street network (13). Public transport, taxis, company buses ...etc. and well-organized streets can contribute positively to having a good relationship between neighbourhoods and the city centre. These things can reduce travelling time, which is seen as very important for inhabitants to travel easily with less physical and psychological stress and to integrate people into city life. The second main suggestion is that the neighbourhoods should be seen as an extension of the city (10), and that some of the facilities that are within the city centre should be available within neighbourhoods, thus complementing city and neighbourhood facilities. This would enhance the spread of activities available overall, enhance the flow of people to and from the city centre, create strong ties in neighbourhoods and reduce the felling of segregation.

Other suggestions are more concerned about providing good facilities, leisure places and public utilities within neighbourhoods to improve the qualities of spaces which would lead to people settling in their neighbourhoods and make friendships and social interaction easier, as well as minimising going outside of the neighbourhood for a social life.

Q41- Mention 3 architectural or urban changes you would like to make in Tripoli City in the future. Give 2 reasons for each.

Changes	Freq	Reason	Freq	Total
Improve the situation of the streets and roads.	20	For less congestion. Easy transportation. Narrow streets.	16 13 11	40
To have a good infrastructure and facilities.	11	Improve the built environment. Relaxation of residents.	11 11	22
To have more green areas and leisure places.	10	Outlet for residents. For leisure time.	10 10	20
To have multi-storey car parking.	8	Less congestion. Cars in secure places. Protect pedestrians.	7 5 3	15
To have more parks.	7	Good environment. Outlet for residents. Good view.	7 4 3	14
Change housing blocks to ground-floor houses.	7	Suitable for Libyan families. Good appearance.	7 7	14
Make new neighbourhoods more suitable for Libyan families.	5	To solve housing crisis. To stop having changes or adding to houses and flats	5 5	10
Maintain the old buildings.	5	For good view. To protect traditional buildings.	5 5	10
Control the distances between blocks.	5	For privacy. Relaxation of residents. To be suitable for climate.	4 4 2	10
To have compact houses.	4	Suitable for climate. For sustainability.	4 4	8
To remove demolished building rubble.	3	For good view. For health reasons.	3 3	6
To have good building organisation.	3	Good view. Follow the law.	3 3	6
More concern for children's play areas.	3	Safe play areas. Good for social relations.	3 3	6
Expand Tripoli master plan.	3	To solve housing problems. To have more planning areas.	3 3	6
Establish train metro system.	3	To solve transportation problems. To save time.	3 3	6
To remove buildings	3	To uphold the law.	3	

contravention that contravene the regulations.		For a good appearance.	3	6
Put more care into seaside and tourist places	3	For a good appearance. For good leisure places.	3 3	6
Complete utilities at neighbourhood level.	3	For stability. Less congestion at streets. Relaxation of residents.	3 2 1	6
Plant more trees.	2	Improve environment. To have shaded areas. Less dust.	2 1 1	4
General cleanliness.	2	Environmental protection. Good view.	2 2	4
To have public toilets.	1	Human need. For hygiene.	1 1	2
More traffic lights.	1	Less traffic problems. To save time.	1 1	2
Separate industrial from housing areas.	1	To improve the living environment. Relaxation of residents.	1 1	2
Total	**113**			**225**

Table: 8. 45 Future architectural or urban changes that the respondents would like to make in Tripoli city.

Respondents mentioned several changes that they would like to occur in Tripoli City and gave different reasons for that (Table: 8.45). These changes were seen by respondents as criticisms of architecture and the urban fabric of Tripoli city and can be classified into five groups: planning and land use, building qualities, aesthetical purposes, transportation systems and environmental purposes.

Group one, planning and land use: there is a need to improve the streets and roads, make new neighbourhoods more suitable for Libyan families, more compact houses, control the distances between blocks, expand the Tripoli master plan and separate industrial from housing areas. These changes were seen by the respondents as important to improve the quality of external spaces and as faults of the existing planning and building legislation. The interviewees see the streets and roads in Tripoli as bad, congestion, difficult for transportation, narrow and in need of improvement.

Group two: improve building qualities such as change housing blocks to ground floor houses, maintain the old buildings, remove buildings that contravene the regulations, and have public toilets.

Group three, which concerns the need to improve the aesthetical appearance of buildings and the layout of the city, such as remove buildings that contravene the regulations, put more care into seaside and tourist places and remove demolished building rubble.

Group four, which concerns the need to improve transportation systems, such as establish a train metro system, more traffic lights and to have multi-storey car parking.

Group five, was concerned with the need to improve environmental issues, such as to have more parks, plant more trees, general cleanliness and complete utilities at neighbourhood level, to have more green areas and leisure places.

Q42- Mention 3 architectural or urban changes that have been made in Tripoli City that you did not like. Give 2 reasons for each.

Changes	Freq	Reason	Freq	Total
More multi-storey housing blocks.	12	Unsuitable for Libyan families. Bad appearance. Negative psychological feeling.	10 10 4	24
Cutting down the trees and building on green areas and agricultural land.	10	Bad for health. Bad appearance. Destroys agricultural land.	8 8 4	20
Unplanned buildings.	7	Bad appearance. Against the law. Destroys open spaces.	7 4 3	14
Changing some of streets.	7	Loss of time. Cause of congestion. Less parking.	6 5 2	13
Destruction of some old buildings.	5	Bad planning. Loss of traditional architecture. Wastes money.	4 3 3	10
Development of seaside.	5	Destroys nature. Wastes money.	5 5	10
High-rise buildings with glass facades.	4	Unsuitable materials. Destroys the general appearance of the city.	4 4	8
Ring roads.	3	Changes the fabric of the city. Adds to noise.	3 3	6

More shops without permission.	2	Bad appearance. Damages the land use.	2 2	4
Putting industrial workshops near housing areas.	2	Source of pollution. Adds noise. Unhealthy environment.	2 1 1	4
Some neighbourhoods were built far from the city centre.	2	Isolation. Spend more money on transportation.	2 2	4
Total	**59**			**117**

Table: 8. 46 Architectural or urban changes that have been made in Tripoli City that respondents did not like.

Respondents mentioned the changes that have been made in Tripoli City (Table: 8.46) which they dislike and concentrated on the quality of buildings, planning and land use development and the location of residential areas, followed by other reasons for their dislike. The poor quality of buildings included: more high-rise housing blocks, unplanned buildings (informal), the destruction of some old buildings, high-rise buildings with glass facades and more shops built without permission. The high-rise housing blocks do not suit the Libyan way of living, as was explained earlier in previous questions and they generate many problems for their inhabitants. Some people in Tripoli build informal buildings inside and outside the Tripoli master plan (without building permission) as extensions of their dwellings or for commercial purposes. That deforms and spoils street appearance and destroys open spaces. Other things some respondents dislike is the destruction of some old buildings due to these buildings having a value to people; they are part of their cultural heritage and should be protected to keep a continuity between the past and present. Some respondents dislike high-rise buildings with glass facades since they are not suitable for a hot climate and need to have air-conditioning systems which cost more energy and undermine economic sustainability (see Chapter Six). Cutting down trees and buildings on green areas and agricultural land was disliked by some interviewees because it has a negative effect on the environment, such as more dust, less oxygen, more wind and less places people can enjoy doing sports, having barbeques and relaxing.

Some respondents disliked a number of issues related to the development of planning and land use, such as changing some of the streets, ring roads and putting industrial workshops near housing areas. Some interviewees see the ring roads as sources of noise,

pollution and a danger for people due to the high speed of the traffic. Having industrial workshops mixed with housing areas harms the inhabitants because of lots of noise and dust. Planning and building legislation should prevent this. Islamic law in Tripoli Old City addressed this issue with more care (see Chapter Four).

Some respondents did not like having some neighbourhoods far from the city centre, as in case study 3 in Tripoli public housing since location plays an important role in integrating or segregating people and increasing or decreasing social interaction and activities. To be far from city life or other neighbourhoods has a negative effect, such as an increase in travelling time and segregates people from their relatives and friends which is a human need (belonging and love needs) as illustrated in Chapter Five.

Q43- Would you like to say anything more about your city?

Interviewees mentioned some issues that they saw as important for developing the city which are summarised in the following points:

Provide more children's playgrounds and green areas.	10
Pay more attention to utilities that improve the living conditions.	9
Plant more trees and make good landscapes around neighbourhoods.	9
Solve the traffic problems and make parking areas for taxis outside the city centre.	7
Plan compact low-rise houses.	7
Pay more attention to the seaside and tourist places.	7
Provide more facilities that help the city to be clean.	4
Homogenise the colours of facades for every neighbourhood.	4
Reduce pollution from cars and industries.	3
Total	60

8.11 Professionals' interviews

This section seeks to present the opinions of professional architects and planners about housing in Libya generally and to refer to planning and building legislation particularly to gain from their responses such insight and comprehensive information as one would expect from professionals with their background and wealth of experience. The main object of the interviews is to benefit from the interviewer's experience. The author expected to gain significant information from the interviews which would make a good contribution to and shed light on and enrich the study, thereby helping to contribute to valuable recommendations in support of outlining and developing Libyan planning and building legislation that might lead to building housing that is more suitable for Libyan society. In doing so, the author considers that all issues can be viewed and explored from different perspectives which will help to respond to the main objectives of the study and consequently lead to determining good planning and building legislation.

The following presents an English translation of the interviews, which were carried out during July and August 2002 and in May 2003 in Tripoli city. Each interview, in Arabic, took approximately one hour and was recorded on tape. The author in the translation attempts to present the same sense of meaning of what the interviewees said.

8.11.1 Key decision makers, professional people

a) Engineer: Hamad Jumu'ah Al Shaibani, The head of the land surveying and applying department, Constructional Planning Trust, Tripoli. The interviewee has 25 years experience in constructional planning.

The interviewee was asked about the problems he has encountered in his job; he raised many significant points such as:

- The absence of obligation to complete the applications and carry into effect the approved scheme regarding the building and opening up of new roads and other different facilities.
- The lack of co-ordination between the different executive departments during the undertaking of projects under construction (sewerage; water supply; electricity; telephones; etc.)
- The limitation of the proper use of lands of the approved schemes.

- Non-compliance with laws and the non-implementation of regulations to put these laws into effect by the official bodies or by citizens has highlighted the importance of constructional planning and how to minimise the negative effects, such as flouting and breaking the law.
- Neither the engineering offices nor the other general official bodies stick ethically to the conventional regulations of the profession as some of the construction projects are designed by unqualified people who lack knowledge of the basic designs and the necessary constructional planning skills. This is one of the major problems that can be encountered even these days, due to the fact that the Syndicate of Engineering does not follow up, supervise or get the relevant offices to put the profession on the right track and increase the respect for the profession by having the jobs done by qualified people.

The interviewee's evaluation of the general housing projects in Libya and the proposals for developing such projects are twofold:

Firstly, these projects could contribute greatly to solving the housing problem in Libya for many people and develop some areas which suffer from housing constructional inefficiency, such as *Hay Al-Kwakh* (the destruction of cottages in Tripoli on the airport motorway), which were only cottages before the revolution.

In effect, instant speedy solutions have been found and hasty decisions have been taken to solve this problem in the form of housing projects, without taking into consideration some significant factors, such as the economical, cultural and social values of Libyan society and most importantly, the following:

- The human relationship issues of individuals and various interested groups.
- Education and technical developments.
- The psychological needs and spiritual satisfaction derived from religion and cultural traditions.
- Ecological and environmental factors, such as the nature of the land, the topography of the area, the climate and weather conditions, i.e. the degree of temperature, humidity, wind and rain.

Secondly:

- These projects have neither respected the Islamic values nor taken into account the Arabic traditions;
- There has been an absence of design efforts that have been aware of the environment and tried to address and accommodate its characteristics;
- The interior and external appearance of theses projects has been distorted;
- There has been a lack of regular maintenance of these projects; and
- A lack of attention towards the landscape and the neighbourhood.

All the above-mentioned reasons have affected negatively the quality and appearance of these buildings, which in turn has reflected back on the way these buildings have been used by the occupiers.

As for the positive and negative elements in the planning and building legislation that governs Libyan buildings, with regard to the scale of one single unit as well as the neighbourhood, the interviewee mentioned that the size of one unit is really only suitable for a family consisting of five members or less. However, he raised a further four criticisms:

- Planning and building legislation does not take into consideration any further expansion where some extensions may occur to the dwelling unit and neighbourhood.
- There is a lack of the essential services such as schools, nurseries, playgrounds, supermarkets, landscape and other utilities.
- These projects show a lack of attention to constructional design, which is very important as it is considered the mirror that reflects constructional planning.
- It neither expresses, supports nor develops the local character through providing an environment of harmonized elements to cope with the occupational, economic and social framework.

Regarding the law's direct impact on the design and planning of the buildings and whether the new designs are remote from the traditional forms, the interviewee believes that some of the laws affect negatively the design as mentioned earlier, and that the constructional planning boundaries, together with the way of using the lands, make the

modern buildings appear differently from the traditional ones, particularly the attachment of the terraced buildings and the best use of the land.

As for his opinion of what can be added, modified or even excised from building legislation, he answered that the laws and regulations of constructional planning are quite good because they take into account most of the considerations. However, there is a latent problem in the lack of applications on the part of the public and private sectors as well as consultancy offices.

He also mentioned some governmental and official bodies that have had a considerable impact and through which Libyan house building can be improved, they are:

- The Constructional Planning Trust.
- The Engineering Syndicate.
- The People's Committees of the regions, *Sha'biat* (similar to the City Councils).
- General Planning Council.
- Universities, colleges and institutes.

He concluded with some recommendations for improving the quality of houses:

- Improved co-ordination between the above-mentioned bodies towards achieving proper economic planning and design.
- Undertaking studies as well as doing social and technical researches.
- Using the media as a communication resource and a source of dissemination regarding the importance of planning and applications by the media taking part in upholding the laws and regulations regarding construction, and the role of local people to participate in it.

b) Engineer, Bashier Al-Maloul, 30 years work experience, executive director of the national council of landed investing, as well as (previously worked as minister of Surman Municipality).

As a response to the main problems that the interviewee encountered during his period in charge and how he tried to improve the housing situation in terms of planning and design, he mentioned that:

- Most of the problems were economical in nature due to the increase in constructional costs, for example, the size of one column is (50x40) cm whereas in neighbouring countries it is not extended beyond (20x20) cm. This difference increases the cost, which in turn increases the total cost of the building and is reflected on the householder's budget. There is a lack of accurate studies and a lack of building laws that deal with such issues.
- The routine bureaucratic procedures as well are such that neither the individual nor the official public bodies have a monopoly or are bound by the regulations and decisions; most of them are out-of-date and purposeless.
- The building design does not take into consideration social factors, in terms of the necessary space requirements for the Libyan society; most social occasions take place inside the home which requires enough room and more space particularly for storage. The large number of guests, for instance, requires a guest-room of a larger size, it should therefore be increased from (5x5) m to (10x20) m. The same also is true for the bedroom, from (4x4) m to (7x8) m. The most important thing for the new owner is to be seen in a modern property that shows the level of his economical status. The Libyan citizen cares about three main things; luxurious accommodation, a luxury car and a high level of education for the children.

In response to how he assesses and evaluates the public housing projects, he said:

- The public houses are inadequate in terms of the size and number of the spaces per housing unit as they have been created and controlled by the economical element (the cost).
- Public houses in Libya, are considered as temporary accommodation, they therefore are given less attention and less importance. The occupier of a public house may stay in the property for 5 years or 20 but will still be looking for and making an effort to get permanent accommodation or a farm, if the occupier is of Bedouin origin and cultural background.
- The design of multi-level buildings is one housing solution, though it is not the best one and therefore should not take place in the future. The interviewee personally preferred the horizontal way of building because it provides easier services and behaviour can be controlled in an easier way.

- The multi-level building approach will disappear even in the advanced countries as a result of the development of communication technology. Work could be performed even from home, and there is no urgent need to increase the number of offices and office personnel. Through the Internet's services, five or six persons are quite enough to run a company.
- The widespread growth of the public housing projects within the suburbs outside the city scheme has caused several problems, such as the lack of infrastructural services (roads-sewage-water, etc) as such services require a lot of money.
- Psychologically speaking, Libyans do prefer to live in private houses, but even luxury flats of 1000 sq. m, are still flats, even if they are of highly developed standards. The main reason behind that is their Bedouin culture, as they are used to living in a freer space rather than in crowded flats. The interviewee travels, for example, on daily buses about 70 km from his home to his work because he is keen to have his privacy by living in a private house near his relatives rather than living in a flat.
- It is quite difficult, in public housing, to control residents' behaviour because of the spreading of bad habits as well as anti-social behaviour and unpleasant manners.

The interviewee also viewed the positive and negative aspects of Libyan building legislation as follows:

- He considered the building laws as quite positive, apart from the lack of social considerations, such as privacy and this is quite evident from the modifications that have taken place in the balconies in order to achieve and secure the privacy. He also confirms that the Libyan culture is governed by the Bedouin nature, which prioritises and gives high importance to modesty, thus they feel that opening the windows onto neighbours' living rooms and bedrooms is against such social norms.
- These laws do not take into account the agricultural lands, protection and the land schemes are unbalanced and create class divisions, in terms of wealth classification (poor – rich).

- The interviewee, however, did think that the advantages of these laws outweigh the disadvantages.

The interviewee concentrated on the impact of the building laws and regulations on the design and planning of the houses, which in turn affects the width of the roads, streets and the form of planning in general. This planning was designed by foreign engineers who have no considerable knowledge of the cultural values of Libyan society. These designs were western-oriented which suited the European societies more, thus when they were applied legislatively to the Libyan society, they do not work properly. In the city of Surman, for example, the people consider the approval of any new master plan as a crisis, thus it never takes place because the proposed roads of 20 m width have to be opened up through individuals' farmlands without any compensation.

By way of conclusion, the interviewee proposed some points regarding Libyan building and planning legislation, they are:

- The law should be reviewed and developed regularly.
- The law should be based on the culture of the people and their understanding.
- The law should help the designer and the planner to understand people's requirements in order to achieve success.
- The law should come as a result of co-operation between both the designer and the people.

c) Architect Ezidin Al Tawati. 22 years work experience, An Archet. Engineer in the Constructional Planning Administration, Tripoli.

The interviewee began his discussion about public housing as follows:

- Public housing could be a good solution if the Libyan culture and environment are taken into consideration in designing and studying such projects. These houses, however, were built with imported building materials, which are not suitable for the Libyan environment, thus it affects negatively the inhabitants' life. Using unproofed materials against either heat or cold, forces the occupier of the property

to resort to the use of central heating and air-conditioning which requires more electricity and leads, of course, to extra costs.

- Most of the locations of these projects take place outwith the city schemes. They therefore suffer from isolation and also as they are built on agricultural and farmlands, they require pre-planned infrastructural services of roads, water and electricity but often this does not happen.
- These projects produce a mixture of different styles of building designs; they therefore have no specific identity of the traditional heritage and have not taken into consideration the religious, social and cultural values, which are of great and primary importance in people's lives.
- These projects suffer from huge spaces between the buildings. This space has not been covered with tiles nor afforested and bounded with trees, bushes and grass, thus such empty areas become a source of dust and environmental pollution and therefore become an element of danger to the general health.
- These projects lack the basic services of schools, educational centres, day centres for the elderly, playgrounds for the children...etc that are quite necessary for people.
- Most of these projects have no places for social gatherings, which strengthen the social interaction as well as the feeling of commitment, in terms of adherence, and belonging to the place.
- The absence of people's contribution to the designing and planning of these projects makes them inadequate and not meeting their requirements.
- The projects contracts cover the houses built only, but do not cover the other service facilities. This, of course, causes many health problems and leads to environmental pollution as in *Hay 2 March*, in Tripoli where the streets, roads, pavements and utilities are still unfinished.

d) Architect Salah Al Maquri. 21years work experience. The head of the technical department of the National Council for real-estate lands investments.

According to this interviewee, public housing is a cost-effective compulsory solution to solve the emergency housing problem in Libya. The state has provided a large number of houses within a short time and concentrated more on the economical issues. This

comes at the expense of the quality of these houses. The lack of social studies, on the other hand, has affected negatively the houses' style.

The interviewee also raised a point regarding whether is it possible to develop and improve the standards of the public flats' design to match the level of the private houses. He mentioned that there is a big difficulty for the designer to meet all the different tastes and satisfy all the different desires of the neighbours due to their different educational levels and their cultural differences. One neighbour, for example, prefers to plant flowers and roses, another prefers not to; the building has only one entrance and one lift, the large number of children in the same building who are playing on the stairs due to the lack of playgrounds nearby, cause a great disturbance for the inhabitants, especially in the afternoon when the Libyans are used to having a nap after lunch.

The absence of building management and regular maintenance leads, in turn, to the absence of basic services. It is also noted that most of the car parking spaces are vacant, particularly at the *Enjaila* district in Tripoli, and the cars are placed over the pavements, as each occupier prefers to park his car as close to his property as possible for security and safety reasons in order to watch the car, keep an eye on it and keep it under control. The upper floors of the buildings are undesirable and cause great annoyance to the inhabitants.

The life in the traditional towns as well as in Tripoli was very simple, the streets were quite narrow, of necessity. The measurement standards of today have changed; the design of roads requires wider streets because the use of cars has become a decisive factor in the planning.

The lack of a sound-proof system in the prefabricated buildings is considered as one of the occupiers' main problems because of the economical aspect as it costs around 500 L.D. per metres.

In many cases the citizen was suddenly transferred from a simple house or a tent and moved to live in a flat in a building. This new situation has created many social and economical problems.

The new planning standards have some weaknesses, as they are governed by western law, which is not recognised by the local people.

The designs of the buildings have not taken into consideration disability services provision, in terms of car parking, corridors and lift size, which should be obligatorily taken into account, reconsidered and added to the building law.

There is a lack of co-ordination between the many different bodies that provide the services, i.e. electricity, water, schools…etc.

8.11.2 Architects and planners who have private offices

a) Architect Abud Al-Kader Amir, 23 years work experience and has a private office for design and planning.

This interviewee, when asked to give his opinion about public housing in Libya, said that most Libyan people prefer to own a private house with ground floor because its external and internal spaces are suitable for social activities, privacy, norms, family members and the culture of the society. He added that "public houses in Libyan culture are considered as being a transitional dwelling until they have a suitable house".

About the changes that were made by inhabitants in their flats and what the motivations were for that, the interviewee's answer was that most public houses are designed and constructed by foreign companies and consultant offices and they do not have good knowledge about local culture and actual people's needs. As a result, different public housing patterns emerge which are unsuitable for Libyan families from spaciousness, privacy, security and safety points of view. These lead to enforcing inhabitants to make many alterations to the external and internal spaces of their dwellings. These changes are as a result of an unsuitable design which does not consider the local socio-culture and climate of Libya. For example, closing off balconies to increase privacy and prevent dust and rain from entering into internal spaces or by adding more space to specific areas, such as the living room, kitchen or bedrooms. His opinion about these alterations

was to see them as spoiling the external elevations, giving an ugly view and people see them as the failure of architects.

When asked if the inhabitants or those who make alterations consult an architect or civil engineer how to do the alterations, the interviewee said that most of the alterations were done without any advice from an architect or civil engineer. From his observations, most of the alterations contravened the law and spoiled the general view of the housing blocks. Some of these alterations created construction problems, such as cracks, as a result of increasing the load by adding a new floor on the roof. In his opinion, any alterations should be done by getting advice from an architect or civil engineer and finding out how to do it in the right way. He added that there should be urgent legislative action taken to stop this phenomenon.

When asked his opinion about planning and building legislation in public housing and if it has a negative impact on planning and the design of spaces which motivated inhabitants to do alterations, the interviewee illustrated that in the following points:

- Most public housing in Libya was designed by foreign consultants' offices which lead to unsuitable housing patterns, for example, prefabricated houses which do not consider the local climate and way of life.
- There is a lack of appropriate planning for the hot climate in terms of orientation, offering shaded external places and acknowledging the socio-culture of the local people. Sometimes the same design and planning of public housing was applied in different regions and in different topographical sites.
- In these projects the main aim was to produce quantity rather than quality where infrastructure, public utilities and specific spaces for elderly people and children were ignored.

All these reasons motivated inhabitants to make alterations that contravene planning and building legislation.

The interviewee's evaluation of Libyan current planning and building legislation was: this legislation has many gaps and needs to be developed and most of the codes are unsuitable for the Libyan way of life. The legislation needs to be reviewed regularly, for example,

every four years to be updated by new developments of everything related to building and planning. Benefiting from the experience of other countries that have the same conditions and, how they deal with this context would also enhance planning and building legislation.

b) Architect Fauziya, M. 8 years work experience and she is a member of a private design and planning office.

The interviewee began by saying that, generally, high-rise public housing is unsuitable for Libyan society from socio-cultural, economic and climate perspectives. These houses need more technical maintenance such as lifts and pose more danger for elderly people and children.

With regard to internal and external alterations which have been made by inhabitants to their flats, in her view, she sees them as a cause of defacing the general view, particularly those elevations that occur on the main roads; also, these alterations are against the law. But residents are forced to do that due to the fact they are seeking privacy, safety, want to extend some spaces or to add some new spaces, such as a storeroom.

When she was asked if the inhabitants go to architects to advise them how to make alterations and in her opinion if the advice was necessary, her answer was: "During my work experience I have not seen anyone who inhabits public housing come to my office for advice how to do any alterations, however, I advised and supervised many alterations in private houses. I consider it is necessary to take advice from specific people who know how alterations should be made with suitable materials, good specifications, in harmony with other spaces and to be within the law."

Her opinion about planning and building legislation that applied to public housing in Tripoli and whether the legislation has had a negative impact on the design and planning of internal and external spaces was that most public housing in Tripoli was constructed without a complete infrastructure, for example, utilities such as children's play areas, safe parking areas, paved streets and street lights. Internal spaces within flats are unsuitable for extended families and unsuitable for privacy, climate conditions, and social events such as marriages as well as difficult for elderly people who live in high-

rise flats. All these issues have motivated residents to make many alterations, most of them in contravention of legislation.

Concerning if she was satisfied or dissatisfied with Libyan planning and building legislation and what is the role of designers and planners to ensure they produce good housing qualities, the interviewee answered that in the last few years she had seen many well designed houses which had been designed by local architects to a high standard and which are suitable for the Libyan way of life but these are limited to private houses. Libyan planning and building legislation should be developed to fulfil what the society needs, for example, the lots area and setback, some of the codes have become obstacles for architects and planners.

In her opinion public housing blocks, particularly high-rise should not be more than ten blocks in one site and should have a private parking area, nursery school and should be surrounded by a fence. The blocks should not be higher than four floors with unity on elevations, colours.

c) Architect Adel, Z. 10 years work experience and he has a private design and planning office.

This interviewee's opinion about public housing was that public housing projects in Tripoli are succeeding in accommodating many families (quantity) however, there is a failure to provide suitable spaces for Libyan families and their way of life. Particularly, public housing blocks which have 7-10 floors with limited covered area and useless external spaces which are designed to be green areas, but due to a shortage of water, they remain empty without any plants and become a source of dust.

Regarding the alterations, he maintained, there are many motivators behind public housing alterations such as, providing additional spaces due to an increase in family members or there is a need for more spaces to accommodate new families of married sons who face difficulty in owning private houses or to solve problems that happen from poor design, such as closing off balconies because they are not used, all this causes a lack of privacy and is a source of dust.

When the interviewee was asked if the residents went to architects for advice about how to do the alterations, he said that most of them do not go because they know that alterations are against the law and few of them go to civil engineers.

His view of planning and building legislation, as applied to public housing and if it had a negative effect on the design and planning of external spaces was, the spaces between housing blocks are badly designed, that meant they were, or were classified, as semi-public, which causes socio-cultural and environmental problems. As a result, residents who live in ground-floor flats divided these spaces and added them to their flats as gardens or built garages in them thus they become private spaces to solve problems which had come from them. The interviewee suggested that the legislation should be readdressed to fill some gaps in it and developed to be more suitable for and reflect people's way of life.

d) Planner Mohammed, S. 10 years work experience and he has a private design and planning office.

This interviewee's view about public housing is that it is unsuitable for Libyan socio-culture and way of life where privacy is not fully gratified, the number of spaces are not enough to accommodate all family members particularly, for an extended family or a family that has more than five children and there is a difficulty which faces people who live in high-rise flats using staircases because of a lack of lifts or they are out of use.

His opinion about motivators that force residents to make alterations was these could be as a need for additional space, such as new rooms, a garage or store room, or a need for privacy or to protect the internal spaces from weather conditions. He added that these alterations were done without any advice from architects or civil engineers because they know that it is against the law.

His opinion about planning and building legislation that was applied to public housing and whether it has a negative effect on the design and organisation of internal and external spaces was: "I think that the legislation remains unable to fulfil all Libyan families' needs due to many of its codes being imported from other countries.

Moreover, these codes are applied in all Libyan regions, which do not consider the differences in geography, climate and customs."

He maintained that: "I am unsatisfied with Libyan planning and building legislation since it needs a re-evaluation to be suitable for all Libyan regions and I feel that it has many gaps which cause real problems to people who use the spaces such as pollution, lack of privacy, socio-cultural and economic." He added that the zoning codes, such as setbacks, plot area, building height and site coverage are the source of the main socio-cultural and economic problems and the loss of agricultural land.

He raised some points which could be used to develop planning and building legislation and therefore, improve the design quality of spaces, these are:

- To consider the circumstances of every Libyan region when addressing planning and building legislation, which include geographical, climatic and socio-cultural issues;
- To give opportunity to users to participate in the design and planning process of external and internal spaces; and
- To use and develop local building materials which are suitable for every region.

8.12 Classification of the Responses

This section classifies the responses into three categories: **objects**, **adjectives** and **activities** (Tables: 8.47a; 8.47b; 8.48 and 8.49). The classification which has been used is based on the Ujam model (see Witworth, F., 1992). It aims to make the raw information that is related to respondents' interpretation more manageable. The three categories are assumed to be covering the whole environment of stimuli, interpretation and reactions, where the stimulus is the object, such as a building, a square or a street and the interpretation is what the observer feels on encountering the object, and this is expressed using an adjective, such as healthy, bad, clean or old. The reaction of the observer to his or her interpretation to the stimulus is an activity, such as playing,

shopping or modifying. All these might need to be addressed in developing planning and building legislation.

The classification tables of categories illustrate responses and their frequency. Each table presents a category. The frequency of any response is considered to be a sign of its significance. At the next stage, a selection of responses from each category will be explained, this is to present the reason for their significance.

8.12.1 Objects

In this context, objects mean the physical elements of the natural and built (man-made) environment. They include the natural environment which refers to geographical features and places, whether they are constant, for example, the mountains, hills and the sea, or changeable factors, such as environmental conditions like heat, trees and all forms of life. The built environment consists of physical and non-physical variables. The physical changeable factors consist of the artificial arrangement of different elements, material and the spaces between them as a consequence of people's transformations of the environment to achieve their physical functional needs. On the other hand, the non-physical variables include the different activities, memories, values and the spiritual meaning within the geometric space. For example, places cannot be shaped through only the physical attributes, but through the activities which take place there, connected to society's socio-cultural values. This section represents objects in two different tables (positive and negative) as mentioned by the responses (Tables: 8.47a and 8.47b) and discusses some important objects, as confirmed by respondents.

The following objects were mentioned positively in the responses:

Objects	Responses	Frequency mentioned	Total
Building materials	Building materials Local materials Good materials	167 38 8	213
Store	Store room Lack of store	147 43	190

Facilities	Infrastructure and facilities Facilities	147 27	174
Garden	Garden Green area	89 63	152
Toilet	Bathroom and WC Modern equipment Public toilets	110 17 1	128
Garage	Garage	108	108
Kitchen	Kitchen	93	93
Courtyard	Courts Courtyard	79 11	90
Living room	Living room	88	88
Light	Natural light Street light Traffic light Sunlight Bad light	50 15 10 4 3	82
Guestroom	Guestroom	78	78
House	The house Traditional house Detached house Courtyard house	24 7 40 11	72
Centre	City centre	71	71
Neighbourhood	The neighbourhood Quiet neighbourhood	51 17	68
Leisure places	Leisure places Leisure spaces and places Seaside and tourist places	33 20 15	68
Landscape	Layout Landscape	46 20	66
Bedroom	Bedroom	65	65
Environment	Environment Good view Nature view	50 30 12	92
Hall	Mosque hall External hall	42 15	57
Floors	Roof Under ground Ground floor Upper floor Two floors	19 12 11 11 2	55
Sewage	Sewage	51	51
New furniture	New furniture	37	37
Tent	Tent	36	36
Fountain	Fountain	17	

	Swimming pool	14	31
Open market	Open market	30	30
The law	The law	28	28
Open space	Open space	27	27
Young people	More children Teenagers	21 5	26
Doors	Main door Exit doors Private entrance Internal doors	13 6 5 2	26
Traditional technique	Traditional building technique	21	21
The view	The view	21	21
Libyan meals	Libyan meals	20	20
Fence	Fence	20	20
Study room	Study room	18	18
Compactness	Compact buildings	16	16
Doorkeeper	Doorkeeper	12	12
Communication	Communication Telephone Computer	5 5 1	11
Trees	Fruit trees	7	7
Squares	Squares	6	6
Arches	Arches	6	6
Washing room	Washing room	3	3
House wife	House wife	2	2
Mushrabiyah	Mushrabiyah	2	2

Table: 8. 47 Objects mentioned as positive by the respondents.

Building materials

Building materials are very important objects, mentioned 213 times in the responses (see Table: 8.47). Many types of building materials are needed to construct a house. The importance of building materials are vital in fulfilling most human needs, such as safety, suitable for the local climate and for aesthetic purposes, as well as having the potential to satisfy and sustain economically the construction sector. These materials could be local materials or imported from other countries.

The use of local materials, particularly in traditional buildings and their success in fulfilling many residents needs, such as by providing suitable internal thermal comfort conditions and at low cost, that made respondents evaluate them as important and they want them to be used in new buildings as much as possible. These responses give a strong indication of the significance of building materials and particularly local ones, and how this must be addressed by housing legislation.

Libya has a great number and large quantity of traditional building materials, mainly used in the construction sector. Most of them are widely available in the majority of the regions, such as stone, clay, sand, gravel, lime, gypsum and others. However, the use by local builders of these materials has been in decline due to their loss of capability in using and applying traditional construction methods. The traditional building materials which were considered to be very effective in creating comfortable conditions in extreme climatic conditions, have been replaced by new imported materials and construction techniques, such as prefabricated concrete elements which are discordant with the local environment, which in turn have affected both the inner ambient conditions of the inhabitants and caused an increase of energy use, as a result of using air-conditioning units to provide suitable internal thermal comfort conditions as in most Tripoli public housing.

The significance of building materials should be addressed with more care to produce a more comfortable way of life, physically and spiritually within Libyan building and planning legislation. However, the current Libyan planning and building legislation is issued without mentioning the need to use building materials that consider the environment, climate conditions and suggest the use of local resources for economic reasons.

Infrastructure and facilities

Respondents referred to the significance of infrastructure and facilities in their responses 174 times. Infrastructure consists of those systems under public ownership, or operated or maintained for public benefit, that are necessary to support the

development, maintenance, and redevelopment of communities and to protect public health, safety, and welfare as well as the environment. The availability and condition of infrastructure, such as roads and wastewater treatment facilities is a critical consideration in most land use planning decisions

The availability and quality of infrastructure and facilities, such as road networks, sewage systems, water supply, etc. and facilities such as markets, schools, public offices, children's play areas, etc. at neighbourhood level or in cities, play an important role in determining the qualitative rank of housing and enhance its prestige. Sufficient infrastructure, particularly transportation systems, is vital to the state's economic competitiveness in attracting businesses and workers and is needed to provide the necessary mobility for the state's population.

Educational facilities are a valuable community resource with the potential for wider use for community purposes. The use of educational buildings and land to provide arts, entertainment and sports activities to the wider public can benefit the community, make a more efficient use of resources, and help to strengthen the links between educational organisations and the community they serve. School buildings, playing fields and other school facilities should be especially suited to multiple uses, because they can be used in the evenings, at weekends and during school holidays.

Multi-purpose halls and mosques are very important to enhance social interaction between people, as was mentioned by respondents in many questions and consideration should be given to providing them in every neighbourhood, as well, it should be recognised that it is of great importance to patients if primary health care facilities, such as doctors' surgeries are located near their homes. However, the public housing projects in Tripoli which embodied these facilities are rare.

Generally, public health, safety, harmonisation, economic efficiency, mobility, and environmental quality are important considerations in planning and building legislation in all societies.

Leisure places

Leisure places play a vital role in gratifying people's growth needs at different ages. Leisure and recreational facilities are an important element in the life of residents and bring vitality and attractiveness to districts of any city. Leisure places are the seashore, clubs, public parks, tourist places, etc. These places provide people with comfort and relaxation and satisfy their aesthetic needs as well as the fact that these places usually offer many social, sport and enjoyment features. These places are needed for all people to reduce stress that comes from the daily routine. Good quality and easily accessible community and leisure facilities are a vital element contributing to the quality of life for local residents. These facilities are diverse in nature and are therefore provided and run by a number of different agencies, each with their own strategies for delivery and their own set of objectives.

Leisure facilities attract visitors, and are capable of generating significant amounts of traffic. Siting these facilities in town centres, which are readily accessible to public transport, can help to reduce dependence on the car and can contribute to the vitality and viability of town centres, in particular by supporting the economy thus they can achieve sustainable development (see Chapter Six). Arts and cultural facilities cover a wide range of leisure activities, all of which play an important role in improving people's quality of life. In addition, they provide opportunities for life-long learning, assist in reducing social and economic barriers, and support economic regeneration and wealth. The provision of these facilities is also directly related to the characteristics of the population and their changing expectations. These facilities should be accessible to both residents and visitors and should consider, in terms of their way of use, local socio-cultural issues, such as the need for privacy and segregation between males and females.

In Libya people go to the seashore to relax or to escape from the harsh climate, particularly in summer when the temperature reaches more than 40C with high relative humidity and where the temperature inside public housing gets very high, due to bad insulation. People take with them all their family members, food and drink and remain at these places until late night time. This situation calls for full facilities in these places to be provided.

Planning and building legislation should address the importance of providing these facilities, but should consider the following points:

- There should be no obviously harmful impact on the facilities of nearby residential properties and other uses;
- They should not cause unacceptable nuisance, in terms of noise or traffic generation; and
- The site should be easily accessible by public passenger transport, walking and cycling.

Open market

The open market or *suq* is an important object to people who mentioned it several times in their responses. The *suq* is a traditional place of enjoyment for many people who rarely go anywhere else. It offers social interaction, buying and selling goods, the exchange of news, and entertainment.

The open market, is an urban element which has always had commercial, cultural and social activities. In the case when there is no place available for it inside the city, the open market is usually located outside the city walls where no defining structural space existed. However, it is a place where people meet each other, buy their necessities and have an enjoyable time. These kinds of markets take place on certain days during the week, and therefore, they are known by these days, in Tripoli, open markets exist on Tuesday and Friday. The local municipalities should provide some facilities and services for open markets, such as drinking water, toilets, lighting, shaded pavements areas and cleansing.

The following objects were mentioned negative by the respondents:

Objects	**Responses**	**Frequency mentioned**	**Total**
Transportation	Transportation	136	
	Public transportation	73	
	No cars	10	
	My car	19	
	Cars	2	240
Windows	Windows	157	

	Closed windows	33	190
Flat	The flat	156	
	High-rise flats	13	169
Road networks	Narrow streets	44	
	Paved streets and sidewalk	27	
	Motorway	26	
	Cul-de-sacs	19	
	Roads	11	
	Street condition	5	132
Water	Water	77	
	Underground water tank	12	
	Lack of water	11	
	Rain water	11	
	Salt water	5	
	Roof water tank	3	
	Water well	2	121
Balconies	Balconies	105	105
Rooms	Number of rooms	55	
	New rooms	42	97
Lifts	Lifts	77	77
Stairs	Stairs	73	73
Workplace	Workplace	72	72
Prefabrication	Prefabrication	68	68
Dust	Dust	57	57
Walls	Thick walls	21	
	Thin walls	17	
	Concrete walls	8	46
Parking	Car parking area	29	
	Multi-storey parking	8	37
Steel	Steel	35	35
Air- conditioning	Air- conditioning	26	26
Animals	Animals	6	6
Agricultural	Agricultural land	4	4

Table: 8. 48 Objects mentioned as negative by the respondents

Transportation

Respondents mentioned transportation the most as a negative object in their responses with the highest frequency (240). Different patterns of transportation are used in modern cities, such as cars, trains, buses, airplanes and bicycles. Land-use patterns in most modern cities require longer journeys for most daily activities. At the urban level, the most important factor is the physical separation of activities, which is enhanced by planning and building legislation. To reduce travel needs, one way would be to bring

homes, jobs and services together in a relatively compact urban centre to achieve a high level of accessibility with little need for movement. An alternative way to reduce the physical separation of activities is to decentralise some jobs and services and connect them to residential areas.

The rapid growth in car ownership has permitted more dispersed patterns of urban development as well as demand for more parking spaces within houses, workplaces, shops, and leisure places and weakened the social interaction within streets.

Most public housing projects in Tripoli are constructed and located far away from centres and segregated from existent road networks. That leads to the construction of new roads and other infrastructure thus, more agricultural lands are lost.

Traditional cities in Libya are characterised by their compact shape, mixed-use and pedestrian movements where most daily activities are within walking distance. This situation leads to less travel for most residents and enhances social interaction between people. The design of roads in these cities is concerned with the real functionality of this network, which leads to a hierarchical order in their layout (see Chapter Seven).

Legislation plays a vital role in decreasing or increasing transportation. Zoning and land-use patterns that come from the application of planning legislation are responsible for the separation of activities, which tends to increase commuter travel. These have negative impacts on people's health and environmental damage by increasing air pollution and causing accidents as a result of there being more cars on the roads. Public transportation could contribute to having fewer cars on the roads and less pollution.

> *Transportation choices are largely shaped by land use development patterns. When cities are designed to be dense, with employment opportunities located close to residences, commuting times and distances are shortened. At the same time these urban forms make biking and walking more feasible.*
>
> *When city planning gives a low priority to the automobile, the result can be less pressure for suburban infrastructure and less urban space devoted to vehicular needs such as roads and parking. When one adds the fact that humans using their feet for transport are inherently equal, it can be seen that walking and cycling are ideals ways of travelling from the point of view of energy*

conservation, environmental impact and social equality (www.utoronto.ca/envestudy/sustainability.pdf).

Windows

Windows within public housing flats were mentioned by respondents as a negative in their responses with a high frequency (190). Residents complained about the size and direction of the windows in their flats as diminishing their privacy in terms of the internal spaces or their windows were overlooked by other neighbour's flats. The main function of windows as mentioned by Libyan planning and building legislation, is to provide healthy internal spaces. This is achieved by having good ventilation and sunlight.

The word for window in Libya is *Al-Rwshan* or *Al-Nafida*. It is the physical element which provides visual and auditory contact between people in internal and external spaces that might occur, for example, between private spaces (bedrooms) and the courtyard or between the internal spaces and the street. The outside contact is usually limited to occur indirectly for privacy reasons. The external windows in Libyan traditional houses usually have a rectangular shape (0.50 × 0.50) m or (1.00 × 0.75) m due to the need for less external opening areas for cultural and climatic reasons and the limitation of construction materials.

In traditional houses, windows are designed to not cause any harm or lack of privacy for householders. Most windows are inward looking by opening on to a courtyard, only a few windows are open on to the public street or alley and even these should be small in size and higher to prevent passers-by seeing what is inside as well as ensuring that windows that occur on upper floors should have special cover, called *Mushrabiya*, which offers indirect contact between people inside the house and outside without being seen (see Chapter Four and Figure: 8.18).

Al-Rwshan or *Al-Nafida* in traditional houses consists of three layers. The first layer is the transparent layer which carries the glass and it is divided into upper and lower parts. The upper part consists of transparent glass and the lower usually has coloured or opaque glass which helps to hide direct visual contact and the resident can control his

contact by opening and closing this layer to have the degree of privacy he wishes as well as to control the ventilation that enters the internal space. The second layer, which carries *Mushrabiya* is in front of the lower part of the first layer and meets privacy needs. This layer lets the internal observer see what is happening outside without being seen from the outside by passers-by. It works as a visual one-way system. The third layer consists of a wooden frame with two or three shutters fixed on them with small pieces of wood with a width of (2.5 to 3.0) cm and (30 to 40) cm in length. This layer controls the quantity of sunlight that is needed in the internal space by opening and closing this layer. In some houses there is a fourth layer, which consists of a steel grid iron, which is used for safety purposes. In modern Libyan public houses, the window's layers are decreased to only two layers as well as its size being increased. This situation leads to many alterations occurring to the shape and materials of the windows by residents to satisfy privacy and safety needs in their flats.

Water

"...we made from water every living thing" (the Holy Quran: S.xxi.30).

Water is crucial for all humankind and plays an important role in sustaining life. It is symbolic of life and one of the most powerful elements in nature. Water is one of the very basic human needs which Maslow put in the lower part of his hierarchical pyramid as one of the key physiological needs (see Chapter Five). Having clean water and providing a regular supply of it to every dwelling, is the main goal for many governments, particularly those who had a shortage of water (Libya is one of them).

Islam considers water as a very significant item, as symbolic of purity and cleanliness. Every Muslim can not practise his daily prayer unless he purifies himself with clean pure water. "*Water in all cultures is the most natural element which has deep-rooted, spiritual and symbolic meaning. In many traditions the source of the sweet waters that emerge from the earth like wells, springs and waterfalls is the supernatural underworld. Springs and wells are often mentioned to symbolise the spiritual womb of the earth and to possess the power to heal, confer wisdom or grant wishes*" (Abdalla, 1998: 234). Water can be a source of happiness as mentioned in the Arabic expression "three things avoid sadness water, greenery and a beautiful face". However, water can be a source of danger such as floods or rough seas.

Respondents mentioned water several times and they complained about the water quality in their flats and external spaces, such as a lack of water, rain water, and salt water. Libya is suffering from a shortage of water and the government spends billions to solve the problem by constructing big projects, such as the great man-made river. Residents of Tripoli public housing resolve the water shortage in their flats by making a lot of alterations, such as having an underground water tank, roof water tank and water well.

Building materials differ in using more or less water and energy in their manufacture, transport and construction. This calls for using appropriate building materials that are suitable for the local climate and which use less water and energy, particularly in countries which suffer from a shortage of water, to help achieve sustainability (see Chapter Six). Planning and building legislation should address this important issue.

8.12.2 Adjectives

Adjectives or aspects are among factors that reflect the qualities through which people have ideas about their own environment. Adjectives consist of the properties perceived in the activities or objects. They are descriptions, not so much of the real object but of the observer's image or evaluation of the objects. In this section, adjectives from the survey questionnaire are presented with the accompanying responses and the frequency mentioned by respondents is shown below (Table: 8. 48).

Adjective	**Responses**	**Frequency mentioned**	**Total**
Quality of spaces	**Bad** (quality of dwelling spaces)	492	
	Good (quality of dwelling spaces, design, view, and materials).	471	
	Deformation	14	977
Size	Free area (empty)	65	
	Small area	57	
	Large area	56	
	Covered area	34	
	Adding area	33	
	No area available	26	271
Privacy	Privacy	260	260
Safety	Safety	139	

	Theft	29	
	Control	16	
	Strong structure	15	
	Weight	15	
	Danger	14	
	Fire resistance	11	
	Crime	7	
	Electrical resistance	3	249
Insulation	Sound proof	119	
	Heat resistance	108	
	Water resistance	3	230
Distance	Far from	63	
	Proximity	15	
	Distance between blocks	14	
	Close to	11	
	Near my work	3	189
Family	Family members	182	
	My family	5	187
Ventilation	Ventilation	105	
	Location	68	173
Maintenance	Maintenance	168	168
Beautiful	Beautiful	161	161
Tightly	Tight	80	
	Tightly	79	159
Suitable	Climatic suitability	114	
	Suitable design	32	146
Annoyance source	Noisy	69	
	Congestion	34	
	Overcrowded	33	
	Disturbance	5	
	Annoyance source	3	144
Traditions	Traditions and costumes	77	
	Libyan life style	47	
	Morals	5	
	Value	4	
	Culture	2	135
Economy	Affordable	59	
	Costly	42	
	Lack of money	17	
	Saving money	13	131
Collaboration	Collaboration	80	
	Co-operation	26	
	Take care	11	
	Assistance with me	8	
	Participation	3	128
Neighbours	Neighbours	108	108

Unsuitable	Unsuitable	54	
	Unsuitable design	46	100
Health	Clean	50	
	Healthy	41	91
Isolation	Separated	59	
	Problems	30	
	Isolation	2	91
Guests	Guests and visitors	71	71
Over looked	Over looked	42	
	Height	26	68
Unclean	Dirty place	26	
	Sweepings	18	
	Illness	9	
	Unclean place	7	
	Tired	5	63
Time	A lot of time	40	
	Save time	12	
	Leisure time	5	
	Reducing time	4	61
Unity	Unity	22	
	Belonging	14	
	Homogenous	13	
	Identity	5	
	Relations	1	55
Social	Sociable	38	
	Celebration	6	
	Social tie	6	
	Outdoor activities	4	54
Comfortable	Comfortable	36	
	Tidy	14	
	Uncomfortable	4	54
Quiet	Tranquillity	32	
	Quietness	17	49
Pollution	Pollution	47	47
Relatives	Relatives	34	34
Excellent	Excellent	33	33
Cheap	Cheap	32	32
Education	Education	27	27
Old	Old	19	
	Old relation	5	
	Long life	2	26
Weak	Weak	26	26
Modern	Modern	26	26
Play area	Play area	26	26
Accommodation	Ready accommodation	25	25

Elderly	Elderly people	25	25
Extension	Extension	23	23
Alternatives	Alternatives	21	21
Prestige	Prestige Appearance	11 8	19
Relationship	Relationship Friends	10 7	17
Human needs	Human needs	16	16
Independence	Independent Unique	13 1	14
Disorganisation	Disorganisation	13	13
Luxury	Luxuries Outlet for residents	5 5	10
Stability	Stability	8	8
Shade	Shade	7	7
Against	Against	7	7
Character	Islamic character	6	6
Important	Important	5	5
Disagreement	Disagreement	4	4

Table: 8. 49 The categories: adjectives.

Quality of housing spaces

Respondents mentioned quality of housing spaces 977 times, describing the quality as good, bad or weak in terms of the space itself, design, view and materials. This is a strong indicator of how this adjective is significant to respondents which calls for planning and building legislation to address these matters with more care.

The main goal of a shelter is to meet individuals' functional, social and spiritual needs. The life of a family and an individual is played out in the space within the shelter. Recognising the quality of space that has to be provided in the family home to satisfy these needs should be a primary aim when formulating housing and space standards using planning and building legislation. Space standards of housing for any specific society may be defined as a measure of the acceptable intensity of dwelling occupation in the context of cultural, social, climatic and technological conditions governing that society. They establish a relationship between people and the amount of space they occupy (Chowdhury, I. 1985:78).

Space standards within a dwelling are articulated in a number of forms and units of measurement. In western countries, they usually denote the size of floor space plus the number of rooms in the dwelling in relation to the number of inhabitants in order to ensure a certain degree of privacy and comfort in family living as well as to maintain health requirements. The units usually adopted to reflect this concept of space standards are 'floor space per person' or 'number of persons per room'. Space standards according to this concept tend to rise with national wealth, they are far higher in the developed countries than the developing ones although household size in the developed countries is invariably smaller. (Ibid. 1985:78)

At neighbourhood level, land use and zoning codes that avoid pollution, noise and dangers play a vital role in formulating quality of spaces as Rapoport (1980) argues: "*The quality `of an area is also judged by the absence of industry, offices, and shops, and planning is seen as an attempt to keep out undesirable elements – whether people or uses, i.e., the maintenance of socially and physically homogeneous areas – a goal markedly different from planners' goals*" (Rapoport, 1980: 53).

Quality of spaces should satisfy their users' needs to create a comfortable way of life and be suitable for the function and activities that they are designed for. Different factors are used to evaluate the qualities of spaces, such as space diminutions, form, building materials, safety, function, level of pollution, privacy and the way the spaces are arranged for different activities.

Safety

Safety is an important adjective for people within external and internal spaces and planning and building legislation is concerned with it from the start as was discussed in Chapter Four. Safety can be categorised into physiological and psychological factors. The physiological safety needs involve freedom from physical harm, such as harmful bacteria, pollutants, natural disasters, (such as fire, earthquake, flood and storms), behaviour patterns, materials, machines and various types of accidents. Pollution from industry and the automobile has a harmful effect on health. Providing a good infrastructure in housing plays an important role in protecting people's health. The psychological safety needs are, having a sense of place, both geographically and socially in a society (Lang, 1994: 234). Medieval cities surrounded by city walls are a

good example of this. Safety in the built-environment is strongly related with building materials, staircases, children's playgrounds, streets and paths. Safety should be maintained inside and outside the dwelling. Respondents mentioned the significance of safety in their responses, such as theft, control, strong structure, structural overload, danger, fire resistance, electrical resistance and crime.

Good urban design adds social and environmental value. By creating a better-connected environment that is inclusive and accessible, it will enhance the sense of safety and security and out to the surrounding areas. Hillier (1998) has developed computer methods showing that crime is most likely to occur where places are less connected and quieter and people feel safer where there is activity. Past urban layouts have had a great impact on the quality of the environment and the appearance of a poor quality environment ultimately affects peoples' behaviour.

The designing of streets, buildings, public and private spaces, these key elements collectively, affect the levels of activities, movement and surveillance in a positive or negative way, which ultimately impacts on the safety and security of places. Thus, good design plays a vital role in the creation of safe, attractive places to live and work. Furthermore, mixed-use solutions can help to increase the presence of people in the streets. Increasing the diversity of land uses can do this. By overlaying various elements, this creates an opportunity for people to be in places over a broader part of the day. Combining a mix of activities and higher densities would increase the presence of people, which helps to make streets and spaces safer.

Elderly people

Elderly people and their special needs are important as was mentioned by some of the respondents. The elderly need special treatment in most external spaces, such as roads, shaded sitting places, places to spend leisure time since when people get older, daily life is connected with different problems.

Elderly people in Libyan society play a major role in teaching children behaviour and in solving social problems within their neighbourhoods. Extended families need to be

maintained by enhancing the role of the elderly within external and internal spaces. Islamic teachings give more consideration to taking care of elderly people as is mentioned several times in the Holy Quran.

Islamic countries put an emphasis on the family sharing the care of the elderly members. A high proportion of elderly people in Libya are still living with their immediate family members, particularly in rural areas. However, the organisation of spaces inside public flats is not suitable from a socio-cultural view, in terms of privacy, bedrooms and bathrooms. For parents living with their married adult children, this situation becomes an obstacle to their practising Islamic teachings.

Public housing in Tripoli can be effective in encouraging partial families, which in effect discourages co-residency between elderly parents and their adult children. People are forced to live far away from their immediate family members. On the other hand, Libyan traditional houses, due to their having the potential for future extension and way of life is encouraging married children to live with or near their parents. This situation pushes some residents in public housing to add new spaces or modify the existing one, as the survey shows, to be suitable to accommodate their parents as well as immediate family members. Having lifts missing or out of use makes another obstacle for elderly people and people with disabilities, particularly in high-rise housing blocks as in case studies 1 and 3 in Tripoli public housing.

Other societies which are dealing well with the elderly's needs in housing can be a good example to learn from, such as in Japan, where there is the innovative architectural design of building a 'garden suite' adjacent to the main house. This provides privacy for both the elders living in the attached unit and the family of the elders' grown-up children living in the main house. This can be a viable measure to adapt to the trend of 'modified extended family', whereby elders can maintain contact and receive support from their adult children, whilst living separately from them. (Chui, 2004: 10)

8.12.3 Activities' categories

The activity categories list the responses of the interviewees to particular behaviours and actions. Activities occur in external and internal spaces, such as streets, squares, urban spaces, courtyards, roofs and rooms within dwellings. Consequently, spaces in

cities and dwellings are a reflection of people's way of life where they can express themselves. They also reflect many essential factors, such as historical, social, cultural, and religious customs in the society. Table 8.48 shows the classifying category: activities.

Activity	Responses	Frequency mentioned	Total
Modifying & adding	Adding	206	
	Separating	37	
	Changing	32	
	Modifying	23	
	Shaping	10	
	Improving	9	
	Redesigning	8	
	Moving	6	
	Deforming	5	
	Building	1	337
Playing	Children playing	119	
	Sporting	2	
	Walking	2	
	Cycling	1	124
Social interacting	Celebrating	73	
	Social interacting	58	
	Different activities	12	
	Meeting	1	114
Relaxing	Relaxing	81	81
Shopping	Shopping	17	
	Buying	14	31
Religious activities	Religious activities	15	
	Worshipping	11	26
Planting	Planting	24	24
Cleaning	Cleaning	24	24
Observing	Observing	23	23
Painting	Painting	20	20
Commuting	Commuting	15	15
Drying	Drying	11	11
Preparing	Preparing	6	6
Storing	Storing	5	5
Sleeping	Sleeping	4	4

Table: 8. 50 The classifying category: activities.

Adding and modifying

The survey results show that adding and modifying is the highest activity which respondents mentioned 337 times in their public housing spaces, as shown in Table: 8.50. This can be a strong indicator to show that people are dissatisfied with the spaces that no longer fulfil their needs and which do not reflect their social and cultural life. Respondents expressed adding and modifying activities by different words that came across all the survey responses, such as adding, separating, changing, modifying, shaping, improving, redesign, moving, deforming and building.

People turn to making alterations for many reasons, such as to personalise the space, the need to have more space, the original design becoming unsuitable for socio-cultural and for aesthetical purposes and environmental modifications (planting and air conditioning). Adding and modifying is strongly related to an increase or decrease in the economic situation of the family, planning and building legislation and flexibility in the design.

Tripoli public housing suffers from a lack of flexibility in the design, which was not given sufficient care by designers; therefore users' additions and modifications are limited by the structural system (prefabricated) and the design of spaces. Because of this, the flats have failed to meet the future expectations of the inhabitants and they respond to only some of the family's requirements. A public dwelling should offer flexibility and respond to family needs and allow for adding and modifying activities to occur easily. Furthermore, current planning and building legislation forces people to make many alterations that need to be done.

Playing activity

Playing is a vital activity for humankind, particularly for children. Playing is a very important activity as a part of cognitive needs as Maslow demonstrates in his model and it also enhances affiliation needs (see Chapter Five). Playing can occur in different places, such as playgrounds, schools, streets and squares, sports fields, etc. Respondents described the playing activity in their responses by different descriptions as children's play, sporting, walking and cycling. This activity is affected by many factors, such as age, sex, time, weather and the nature of the place in terms of comfort and location.

A good physical, environmentally-friendly housing design can offer many places for practising play activity in suitable circumstances and protect users from different dangers and climate, all of which encourages people to play. Such places are clearly organised in a good way in traditional Islamic cities. These places are offered within internal and external housing spaces, such as courtyards, alleys, squares between houses and public areas. The narrowness of the street network and the massive compactness of the urban fabric of the traditional Islamic cities (Tripoli Old City, for example) provided comfortable places that protected people from the direct intensive heat and the sandy winds as well as they had the flexibility to play freely and safely. On the other hand, the internal and external spaces of Tripoli public housing have been designed without giving consideration to the importance of play activities as mentioned by respondents in the survey results, where the external spaces are not offering specific places for play and the streets have been designed on a wide scale for car movement use and have become a danger for people from both cars and the harsh climate.

Specific places for play, such as outdoor playgrounds should be provided within the locality. These places should be easily accessible and offer flexibility to play freely and safely for an age mix within a variety of housing types through the physical environment and social aspects. All of these issues can be clearly enhanced by planning and building legislation.

Religious activities

Religious activities, such as worshipping and religious feasts are vital activities which are related to people's faith and spiritual values. They are reflected in their behaviour and way of life, as well as clearly affected by how spaces are organised. Respondents emphasised the importance of these activities in some responses. Worshipping and most religious feasts occur and are celebrated in the mosque, such as daily prayers, *Aid El-Fetr* and *Aid El-Adha.* Sad occasions, such as death is another type of event that usually occurs in a multipurpose hall that is related to the mosque. These activities were carefully accommodated in the traditional built environment which made them easy to organise and participate in by the inhabitants.

Mosques that are far from residents is an important issue, which the respondents disliked about their current neighbourhood. This issue has a direct negative influence on people's way of life, such as reducing their social interaction, decreasing the daily frequency of times they go to the mosque, which is very important in Islamic teaching as it is a religious requirement for prayers and it leads to the social exchange of news and to resolving their shared problems. These responses emphasise the importance of the role of the mosque and the need for it to be located within walking distance in every neighbourhood and planners should not overlook or omit this consideration.

8.13 Conclusion

The main findings of this chapter in the context of the research questions can be summarized in three parts: at dwelling unit level and at neighbourhood level as well as the findings from the interviewees. The following presents these findings.

First it should be noted that most of the family's members in the public housing survey are between 5 to 10 persons which can be characterised as large or extended families that required more space in their flats to accommodate all their family members and gratify most of their needs.

Dwelling unit level

The results show that the flats of respondents are the only choice that was given to them and which respond only to satisfying their most contingent needs. Additionally, the proximity to the workplace is the highest reason that motivated the respondents to choose their flats. This shows how proximity to the workplace is important to people as it involves less travel by car to the workplace, less time is needed for this and less pollution is caused, where air pollution has direct and indirect results on public health and the economy.

Lack of indoor spaces to accommodate family members is the main reason which motivated people to move from their flats, because, having many people living in a

small place causes overcrowding and a lack of privacy. Furthermore, higher internal density (crowding) is perceived as the factor which forces children out of their flats to play where parental surveillance and control over children declines, leading to juvenile delinquency. The spaces and the total floor area of the sample of public housing in Tripoli are not satisfying the inhabitants' needs and this is generating more problems for them. Planning and building legislation codes, such as setback requirements, site coverage, building height and density play an important role in limiting the number of spaces and floor area.

Interviewees pointed out several negative aspects in their flats accompanied by different reasons. Most of these things are reflected in applying planning and building legislation to such aspects as balconies, windows which overlook neighbours, thin walls and the organisation of internal spaces that are unsuitable for local customs. These lead people to make changes to their homes because they are dissatisfied with the spaces that no longer fulfil their needs and which do not reflect their social and cultural life.

Closing off balconies are the most frequent changes made to the flats for many reasons, such as for the sake of raising the level of privacy for inhabitants' convenience or to increase the area of the spaces that were closed to them, like the living room or kitchen or guest room. On the other hand, flexibility in the design of Tripoli public housing is not given sufficient care by designers; therefore users' changes are limited by the structural system (prefabricated) and the design of spaces. The flats have failed to meet the expectations of the inhabitants and they respond to only some of the family's requirements. A public dwelling should offer flexibility and respond to family needs. Planning and building legislation as a tool should be helping them to satisfy their needs in housing rather than being an obstacle to having their needs met.

The interviewees miss many things from their flats that could be classified as: improving the function of the existing internal spaces, adding new spaces and improving the quality of the internal and external spaces, such as landscaping around the apartment blocks or a garden, internal decoration and having new furniture and equipment. It is clear that most of these concerns are keenly felt and shared by respondents and they demonstrate and reflect the significance of these matters to the residents and how the design of Tripoli public housing has failed to meet the real needs

of people. The lack of children's play areas, privacy and special needs for elderly people are examples of that. Planning and building legislation in Libya can contribute to improving the design of housing by addressing these issues.

Libyan planning and building legislation has concentrated on hygiene needs from only a physical perspective by providing healthy spaces for users, as do other western buildings and housing legislations and neglected other needs which are more subjective that have had an indirect influence on hygiene needs as a result of overcrowding and a lack of enough rooms to accommodate all family members. Most of the flats' spaces are evaluated as 'bad' since some of them lack, in the original design, such spaces as a store room and garage.

The structure and layout of Tripoli public housing determines how well temperature and sound are transmitted from outside or from adjoining properties. In Tripoli public housing, noise and heat from the outside are exacerbated through the use of big windows with a single pane of glass and have prefabricated walls that have less sound and heat insulation, as in case studies 2 and 3 Tripoli housing. Moreover, Libyan building and planning legislation currently is issued without addressing specifically building materials. That is considered as being a gap in this legislation.

Respondents' main preference was for a detached house (villa). This type has a large lot surrounded by a fence in quiet areas and has enough places and spaces suitable for carrying out Libyan customs and traditions. Moreover, the family can participate in the design of the house. This type (villa) is preferred because it offers the possibility for future extensions, depending on family requirements. Future extension is very important for Libyan families because they still have strong ties to close relatives and to extended families. However, people who live in public housing high-rise blocks miss the potential to make any future extension to their flats that could sustain their way of living.

The courtyard house is the second preference for the respondents. Because this type provides good privacy, it is suitable for local climate conditions, it has good ventilation, and offers a space for relaxation as it has quiet spaces, such as the court with planting, a

fountain and high privacy. This type is no longer constructed due to the application of zoning regulations.

Neighbourhood level

Respondents mentioned important issues that they disliked in their neighbourhoods, such as fewer streetlights, mosques that are far from residents and a lack of places for elderly people to meet are other important issues. These issues have a direct negative influence on people's way of life, such as reducing their social interaction, decreasing the daily frequency of times they go to the mosque, which is very important in Islamic teaching as it is a religious requirement, for prayers and it leads to the social exchange of news and to resolving their shared problems. Fewer streetlights can contribute to crime, whereas good streetlights can contribute to people feeling safe in external spaces, These issues are clearly considered in the layout of traditional housing as is evident in Tripoli Old City where the mosques are distributed within walking distance of most residents and there are places for elderly people to chat, meet, discuss, etc. and these are provided on city streets and near mosques. On the other hand, new public housing has failed to respond to these important needs in their external spaces. Libyan legislation should deal with these key issues in order to achieve sustainable neighbourhoods.

The majority of respondents are dissatisfied with the facilities that are provided in their neighbourhood. The main issue they mentioned is the discontinuity of the water supply, which was clearly observed in case studies 2 and 3 of Tripoli public housing. In *Hay Enjela* case study 3, the municipal water supply runs only 1 to 3 days a week, hence people buy water from trucks that carry water tanks. The second reason for dissatisfaction is the overflow of sewage. This was mainly found in *Hay Enjela* (from field observation) where the sewage pipes are not connected to the main sewage system. To reduce this situation, the inhabitants are forced to put septic tanks near their housing blocks on the ground. Maintenance is another important issue that was mentioned by some respondents. This can contribute to increasing the quality of the housing space as well as promoting a sense of belonging and esteem. Moreover, the majority of respondents are dissatisfied with the children's playing areas in their neighbourhoods. Lack of play areas are the main reason for dissatisfaction in the three Tripoli housing case studies which are suffering from a lack of specific areas for children's play.

Planning and building legislation in Libya should study with more care the significance and availability of public facilities in neighbourhoods because lack of such facilities causes many problems for inhabitants and decreases the standard of the quality of spaces and could be a strong reason why the residents move from their neighbourhoods.

The interviewees suggested many matters that they would like included in any future neighbourhoods, which can be divided broadly into four categories:

a. Matters that are related to basic needs, such as safety (street lights, night safeguards and safe parking areas) and privacy needs (suitable distances between housing blocks). These things are very important for all people as mentioned in Chapter Five and the reasons why have been addressed within many theories. Tripoli public housing has failed to respond to these basic things, such as the case of the high-rise blocks in case study 1 where the twelve storey blocks overlook the eight and four storey blocks and in case study 2, where the distance between housing blocks is very close and that causes a lack of privacy.

b. Matters that are related to socio-cultural needs and which can be fulfilled within different physical spaces at neighbourhood level, such as mosques with multipurpose hall, places for elderly people and open markets as mentioned above. These matters are one of the human needs that lead to having strong social relationships between inhabitants. It is not only the availability of these spaces within neighbourhoods' layouts that can fulfil the socio-cultural needs but also the way these spaces are organised.

c. Matters that are related to economic and climate issues, such as compact buildings, good transportation, paved streets, work places within neighbourhoods and open markets (*suqs*). These matters are important for inhabitants to sustain and stay in their neighbourhoods and a lack of these matters can create lots of problems as well as can be a strong factor for pushing them out to move from their neighbourhoods. The significance of these matters was addressed in Chapter Six (sustainable development).

d. Matters that would improve the aesthetics and hygiene of neighbourhoods, such as good landscape, tranquillity, gardens and children's play areas, general cleanliness and maintenance and a complete infrastructure. These are the main aspects which lead to having a comfortable life and enhance the feeling of belonging to the place as was discussed early in Chapter Five.

The location of housing projects plays an important role in the degree of satisfying users' needs that can have negative or positive effects on them as was mentioned in Chapter Seven (space syntax). Choosing locations far and segregated from the city centre and out of or at the edges of master plans, such as in Tripoli public housing case studies 1 and 3, can deprive residents of public utilities and cause many problems, such as a lack of infrastructure due to its cost, a lack of proximity to the work place and a feeling of isolation from relatives, as was mentioned by the respondents. Planning and building legislation should address the significance of the location to avoid the many problems that can occur from the segregation of neighbourhoods.

Respondents made several suggestions to reduce travelling time to and from the work place. The main suggestion is to have regular public transport, such as public buses. Using public transport can play an important role in reducing own car usage which has many positive advantages as well as leads to less travelling time, less negative traffic impacts and increases the opportunity for social interaction between people and creates more amity due to there being more people in one space, such as on a bus at a regular time, meeting, chatting, exchanging news and being familiar with each other and it can achieve good social ties. The second important suggestion is to provide workplaces within neighbourhoods, which would reduced travelling time and keep negative traffic impacts to minimum levels.

Findings from selected key interviewees

The interviewees' results show that there are many opinions shared between the survey respondents and the selected key interviewees. These have emphasised that the public housing issues are common and obvious. It can be concluded that public housing in Libya had two sides, positive and negative. But the negative is more than the positive.

Public housing (positive)

The interviewees demonstrated that public housing projects contributed highly to solving the housing problem in Libya for many people as well as developing some areas. The state provided a large number of houses within a short time and concentrated more on the economical side. This has come at the expense of the quality of these houses. The lack of the social studies, on the other hand, has affected negatively the houses' style.

Public housing (negative)

Public housing is unsuitable for the Libyan socio-culture and way of life, where privacy is not fully gratified, the number of spaces are not enough to accommodate all family members, particularly, for the extended family or families that have more than five children and this is a difficulty which faces people who live in high-rise flats who have to use staircases because of a lack of lifts or they are out of use. In these projects, the main aim was to produce quantities rather than qualities where some infrastructure, public utilities and specific spaces for elderly people and children were ignored.

The results show that most Libyan people would prefer to own a private house on the ground floor because its external and internal spaces are suitable for social activities, privacy, norms, family members and the culture of the society. Whereas, public houses in Libyan culture are considered as transitional dwellings until such time as people can move to a more suitable house.

These flats, however, were built with imported building materials, which are not convenient for the Libyan environment, thus it effects negatively the inhabitants' life. Being non-proofed materials against either heat or cold, forces the occupier of the property to resort to the use of air-conditioning, which requires more electricity and leads, of course, to extra costs.

Most of the locations of these projects take place outwith the city schemes. They suffer therefore, from isolation and also they were built on agricultural land as well as requiring un-pre-planned infrastructural services of roads, water and electricity.

Tripoli public housing projects have embodied a mixture of different styles of building design; they therefore have no specific identity of the traditional heritage type and have not taken into consideration the religious, social and cultural values, which are of great and primary importance in the people's lives. These projects suffer from huge public spaces between the housing blocks. These spaces have been neither covered with tiles nor afforested and landscaped with trees, bushes and grass, thus such vacuums have become a source of dust and environmental pollution and therefore have become a source of danger to people's general health.

These projects lack the basic services of schools, educational centres, day centres for the elderly people, playgrounds for children, etc that are entirely necessary for people. It was also noted that most of these projects have no places for key social gatherings, which usually strengthen social interaction as well as encourage a feeling of commitment, in terms of adherence and belonging to a place.

The absence of building management systems and regular maintenance within this housing leads, in turn, to the absence of basic services. The upper floors of the buildings are undesirable and cause great annoyance for the inhabitants due to the lack of a sound-proof system and this is considered as one of the occupiers' main problems. The designs of the buildings have not taken into consideration the characteristics of the necessary disability services provision in terms of car parking, corridors and lift size, which should be obligatorily taken into account, reconsidered and added to the building law.

Most public housing in Libya was designed by foreign consultants' offices which had no considerable knowledge of the local culture of the Libyan society and that has led to creating unsuitable housing patterns, such as prefabricated houses, which have not considered the local climate and way of life. Furthermore, it suffers from a lack of appropriate planning for a hot climate, from the point of view of orientation and shaded external places. Sometimes the same design and planning of public housing was applied in different regions and at different topographical sites.

Planning and Building legislation

The interviewees concentrated on the great impact of planning and building legislation on the design and planning of public housing, which in turn, affects the width of the

roads, streets and the form of housing in general. Thus when they were applied to Libyan society, they do not work properly. Planning and building legislation which is employed in public housing has had a negative impact on the planning and design of spaces. The negative effects, such as the legislation remain unable to fulfil all Libyan families needs due to many of its codes having been imported from other countries. Moreover, these codes have been applied in all Libyan regions, but did not consider the difference in geography, climate and customs, as well as the zoning codes, such as setbacks, plot area, building height and site coverage which are the source of the main socio-cultural and economic problems and the loss of agricultural land. All of these reasons have motivated inhabitants to make alterations that have contravened planning and building legislation.

The interviewees were unsatisfied with Libyan planning and building legislation since it needs a major re-evaluation to be suitable for all Libyan regions and it has many gaps which have caused real problems for people, such as pollution, a lack of privacy, and socio-cultural and economic factors. Thus they have raised and proposed some points regarding improving Libyan planning and building legislation, which could be used to revise it and therefore, improve the design quality of housing spaces, these are:

a. Planning and building legislation should be revised and developed regularly.
b. The legislation should be based on the culture of people and their understanding and needs.
c. The legislation should help the designer and the planner to understand people's requirements in order to achieve success.
d. The legislation should consider the particular circumstances of every Libyan region when addressing planning and building legislation, from geographical, climatic and socio-cultural perspectives;
e. The opportunity should be given to users to participate in the design and planning processes of both external and internal spaces; and
f. Local building materials should be used and developed which are suitable for every region.

Alterations

Regarding the changes that were made by inhabitants in their flats and what the motivations were for these actions is the fact that most public housing is designed and constructed by foreign companies and consultant offices, and they do not have good knowledge about the local culture and actual people's needs. As a result, different public housing patterns have emerged which are unsuitable for Libyan families from the point of view of spaciousness, privacy, security, climate and safety. These have led to enforcing inhabitants to make many alterations to the external and internal spaces of their dwellings. For example, closing off balconies to increase privacy and prevent dust and rain entering into the internal spaces, or adding more area to specific spaces, such as the living room, kitchen or bedrooms. These alterations can be seen as having spoiled the external elevations, they present an ugly view and people see them as the failure of architects.

Most of the alterations were done without getting any advice from an architect or civil engineer and most of the alterations contravened the law. A number of these alterations created construction problems, such as making cracks as a result of adding more load to the building by adding a new floor on the roof. Any alterations should have been done after getting advice from an architect or civil engineer.

Chapter Nine

Research Findings and Case Studies

Chapter Nine

Research Findings and Case Studies

9.1 Introduction

This chapter consists of two main sections, the research findings and Tripoli case studies. The aims of this chapter are to present the research findings as a framework, (which are distilled from the chapters in Parts One, Two and Three by combining the results of the deductive and inductive parts of the thesis) as a body of knowledge that could help to improve Libyan planning and building legislation. It is important to note that it is not the author's attention intention to produce legislation because that involves a lot of processes and rules and input from different official bodies that are staffed by legislative experts, rather than the author himself.

Section Two, explores the actual situation of public housing in Tripoli using the case studies to see if the housing spaces are imbued with the socio-cultural values of the inhabitants, as well as to demonstrate and give examples of the practical application of some of the most important research framework areas to Tripoli public housing projects. The previous chapters outlined a number of issues which will help the legislators to build detailed building and planning legislation.

Section Two will investigate three case studies of Tripoli City built and occupied nearly at a similar time (1981-1985). This specific period was chosen to allow enough time for modifications to have occurred. A qualitative questionnaire was distributed randomly among households to explore their perceptions and satisfactions which were discussed in the previous chapter (Chapter Eight).

9.2 Section One: The research findings (legislative framework)

This section presents the thesis findings as a framework, which is distilled from the chapters in Parts One, Two and Three by combining the results of these parts of the

thesis, as a body of knowledge. The significant of adopting a comprehensive approach is latent to gain knowledge for housing legislation from a broader perspective that might help legislators to outline Libyan future developments in housing legislation. This knowledge aims to respond to the main aim of the research, which fill the gaps in the current Libyan planning and building legislation. The framework is classified into four subsections; contextual considerations, dimensions, implementation and control and sustainability.

9.2.1 Contextual considerations

It is necessary to inform decision makers (legislators) of the most important aspects that should be considered related to Libyan society, such as culture, climate, religion and way of life. These aspects are deep undercurrents and have core, long-term values which the author advises should be considered in any future Libyan housing legislation.

Religion and socio-cultural values in Libya play a vital role in controlling and directing the behaviour of people within external and internal spaces. Privacy in Libyan society is a priority consideration within housing spaces, as a result of Islamic teaching and future legislation should not ignore this value. The extended family and elderly people have special and high status in the society, as was demonstrated in the previous chapters. The design of housing's internal and external spaces should consider their needs to sustain and bind this social relationship. The necessity to have a mosque within walking distance, for prayer five times a day and its social role within the community should also be considered in housing legislation.

The geography and climatic characteristics of Libya have had a direct effect on housing and urban patterns. Climate in Libya, as illustrated earlier, is characterised as hot and dry with sometimes strong dust winds. This requires special treatment to prevent undesired heat within external and internal housing spaces. The traditional Libyan houses are highly successful in dealing with the local climate, while modern public housing has failed, as was shown in previous chapters. Geographical location should also be considered in housing legislation. Every region in Libya, such as plain coastal, mountainous and the desert region has its own characteristics which give special forms to the traditional cities of each region. However, the prototypes of public housing,

which have been distributed in all Libyan geographical regions with the same building materials and techniques and which may be suitable for one region but not for another, generating many problems because the Libyan planning and building legislation is failing to consider the geography and climatic characteristics of each particular region.

The way of life of the Libyan people has many aspects that should be considered in external and internal spaces. The way of preparing meals in the kitchen, the need to have storage places and the way of serving food to guests and family members requires more internal space and that should be considered in the housing design. Moreover, social and religious events, such as weddings and funerals are all events that usually occur in a multipurpose hall that is related to the mosque, inside the dwelling, or on the roof and in empty spaces, usually squares. These activities were carefully accommodated in the traditional built environment which made them easy to organise and for the inhabitants to be a part of them. All these events should be given more care when developing new housing legislation.

9.2.2 Framework aspects and recommendations

The following areas are distilled from all the chapters in Parts One, Two and Three, as explained above. These issues are the main components of the legislation framework, which consist of physical objects and the non-physical subjective areas in order to improve the quality of the external and internal housing spaces. The first decision was to list these issues that emerged from the research in terms of their frequency. A decision was made to make that sequence according to a framework or a theory that was adopted by the research itself. This section illustrates the research findings' areas, following and classified under Maslow's model. It is an attempt to present the suggestions, to develop the model and locate housing legislation within this important model. The author is identifying areas of such significance. The detailed aspects of these will have to be investigated and decided on the basis of their relevance to the context. These areas, the author needs the legislators to address. It is important to note that some of these areas have overlapped some levels of the model. These could be seen as physiological but they could be also seen as aesthetical, such as building materials. Moreover, Libyan society is driven by the Islamic principles, roles and teaching but the

author felt that Maslow's model has the ability to incorporate many aspects of Islam. This is why there is no need to discommend between Maslow's model and Islam. The model could be seen as in harmony with Islamic teaching.
These areas are presented in the following:

1. Physiological and biological needs

Generally, codes help to offer housing with suitable services and facilities (physiological needs) and have access to air, water, food, sleep, etc, such as:

- *Clean water supply*, which is crucial for all humankind and plays an important role in sustaining life. Water is the most important human needs, it is one of the key physiological needs (see Chapter Five). Having clean water and a regular supply of it to every dwelling, is the main goal for many governments, particularly those who had a shortage of water (Libya is one of them). Water is considered in Islam as a very significant item, as symbolic of purity and cleanliness. Every Muslim can not practise his daily prayer unless he purifies himself with clean, pure water. Housing legislation should have codes that help to access clean water to drink, wash (personal hygiene) and cook food. These mainly occur in kitchens and toilets (possibly offering places for the storage of rainwater and its use for drinking and for the reuse the grey water for planting) (see Chapters Six and Eight).

- *Natural ventilation*, which helps to offer a healthy environment within internal housing spaces to improve the quality of housing spaces. Quality of spaces should satisfy their users' needs to create a comfortable way of life and be suitable for the function and activities that they are designed for. Natural ventilation could be achieved by having a suitable size of windows and doors located in different directions, which would let the air flow easily within internal housing spaces, such as bedrooms, kitchen, toilets, living rooms and guest rooms. Therefore to produce reasonable comfort in the housing spaces, the position of housing plays a major role in gaining sufficient natural ventilation. Technological construction methods and technical solutions can help to optimise the internal ventilation and to minimise the adverse effects of climatic extremes.

- *Day-light*, which is very important for human life. Day-light helps to increase health, reduce housing accidents and to carry out different housing activities as well as has to be available in every inhabitable housing spaces. Access to day-light can be achieved through windows, courts, balconies and doors. Climatic zones play an important role in increasing or decreasing the amount of day-light.

- *Thermal comfort*, which respond to local climate conditions, such as warmth in winter and cold in summer within internal and external housing spaces, can be achieved by having a compact shape, suitable height of rooms, courtyards and shaded areas in streets, play areas, good heat insulation for walls, roofs and openings.

- *Electricity* offers good facilities for housing external and internal spaces and is one of the basic human needs for daily life. Electricity is needed for light, ventilation and to operate many housing machinery and equipment, such as TV, washing machines, refrigerator, lifts, etc. Having specific codes which deal with offering electricity within housing spaces should be embodied in housing legislation (see Chapter Eight, 8.8).

- *Sewage system* is one of the basic facilities needed for healthy housing spaces at the levels of dwelling, neighbourhood and city. A sewage system can work positively to avoid pollution (see Chapter Six). Housing legislation should deal with sewage systems at the three levels by offering detailed drainage codes, private sewers and cesspools.

- *Spaces for preparing and storing food*, are needed mainly inside internal housing spaces, such as the kitchen and store room. These spaces should be provided in every Libyan dwelling and should be suitable in size to prepare food for meals and to accommodate new equipment (see Chapter Eight).

- *Spaces for rest and sleep* are one of the basic human needs. People need to cease their daily activity and to rest to regenerate themselves, physically and mentally. Sleeping take place mainly in bedrooms also on the courtyard or roof, this can

be used for rest and sleep in the summer season. Islamic teaching's ordinance is to segregate males from females in the bedrooms which requires having enough bedrooms to fulfil this purpose.

- *Building materials* Libya has a great number and large quantity of local building materials, mainly used in the construction sector. Most of them are widely available in the majority of the regions, such as stone, clay, sand, gravel, lime, gypsum and others. However, the use by local builders of these materials has been in decline due to their incapacity in using and applying traditional construction methods. The traditional building materials which were considered to be very effective in creating comfortable conditions in extreme climatic conditions, have been replaced by new imported materials and construction techniques, such as prefabricated concrete elements which are discordant with the local environment, which in turn have affected both the inner ambient conditions of the homes and caused an increase of energy use, as a result of using air-conditioning units to provide suitable internal thermal comfort conditions as in most Tripoli public housing (see Chapter Eight). The prefabricated construction system was disliked by some of the interviewees for many reasons, such as: poor heat and sound insulation, particularly thin internal walls (15cm) and if sound-proof layers have not been added, as in the Tripoli case studies, this contributes to a lack of flexibility for extension and it is difficult to maintain. The significance of building materials should be addressed with more care to produce a more comfortable way of life, physically and spiritually within Libyan building and planning legislation. However, the current Libyan planning and building legislation is issued without mentioning the need to use building materials that consider the environment, climate conditions and suggest the use of local resources for economic reasons. Consideration should be given to the use of recycled materials, such as bricks, timber and tiles.

- *Number and size of spaces and the floor area* are the main physical needs to accommodate all family members. The number and size of dwelling spaces plays a vital role in fulfilling the basic needs of the occupiers. The survey results show that the main reason which motivated people to move from their flats is the

lack of indoor space to accommodate family members, particularly so for large families, where the biggest flats have only three bedrooms (see Chapter Nine). Islamic teaching's ordinance is to segregate males from females in the bedrooms. The separation of women from men, especially in seating areas, divides the house into two areas where males and females are received separately. Having many people living in a small place causes overcrowding and a lack of privacy, this has a psychological impact on family members. Current planning and building legislation codes, such as setback requirements, site coverage, building height and density play an important role in limiting the number of spaces and floor area as was addressed in Chapter Four. These codes should be renewed to fulfil the needs of Libyan families.

- *Different housing types*: have a major contribution to reduce over crowding. Different housing typologies within neighbourhoods and streets are one of the main tools to achieve social coherence between residents and offer affordable dwellings for different family sizes as well as for families of different economic status. Most Tripoli public housing are prototype blocks that take no account of the physical characteristic of the site, different families size and the social needs of the inhabitants. Housing legislation should allow having different housing types within neighbourhoods and streets to accommodate poor, rich, small and large families.

- *Elderly and disabled people needs*: Islamic teachings give more consideration to taking care of elderly people as is mentioned several times in the Holy Quran. Thus, special needs for elderly and disabled people have to be met, as was mentioned by some of the respondents and as was addressed in Chapter Eight. Special treatments are needed for the elderly and disabled in most internal and external spaces, such as lifts, ramps, roads, since when people get older or disabled, daily life brings different problems. Having lifts missing or out of use is another obstacle for elderly people and people with disabilities, particularly in high-rise housing blocks. Housing legislation should embody these needs in special and detailed codes.

- *Future extension* is very important for Libyan families because they still have strong ties to their relatives and extended families. People who live in public housing high-rise blocks miss the potential to make any future extension to their flats that could sustain their way of living. Some respondents mentioned that there was little potential for future extension in their flats. The design of the apartments does not take into consideration the extensions which are likely to be needed during a family's life cycle. Due to the prefabricated walls and columnar construction system, which was adopted for blocks in case study 2, *Hay 2 March* and case study 3, *Khilat Jumma* (*Enjela*), residents face difficulty in making internal and external redesign modifications to the spaces, particularly those flats which are above the ground floor. The main reasons for future extension are: an increase in family members, spaces such as the kitchen, living room and guest room becoming too small to accommodate the activities that occur in those spaces and insufficient separation between family members and guests' areas. In traditional houses in Tripoli, people use the roof and courtyard for future extension, such as adding a new bedroom for married sons. Planning and building legislation in Libya limits any future extension by applying zoning codes, site coverage limits and floor space ratios (see Chapter Four, Chapter Two, 2.4; Chapter Five 5.3.1).

- *Paved streets network* that lead to having good environmental design, public sanitation and a healthy place by protecting the external and internal housing spaces from dusty winds, swamps and pollution. The spatial hierarchy of streets that provide a clear separation between private and public life is the significant thing that people miss in their current public housing in Tripoli. This is due to the implementation of current planning and building legislation and the adaptation of the western concept of neighbourhood, where the streets become wider and are mainly constructed for cars, where the width of the streets according to Libyan planning and building legislation is 25-30 metres for collector roads, 20-25 metres for main streets and 8-12 metres for inner streets. These wide streets generate many dangers, particularly for children and elderly people, as well as pollution and increasing heat. These codes should be developed to prevent their negative affects.

- *Offering places for planting* vegetables *and fruit trees* such as a garden in a courtyard or in the front or back of the houses for plants, vegetables and fruit trees should be available in order to satisfy domestic needs.

- *Conserving the land*; is very important, particularly agricultural land which Libya is suffering from a shortage of and the housing legislation can contribute positively to preserve it by having codes that help to use minimum plot areas, site coverage, setbacks and a compact urban fabric (see Chapters Four and Six).

2. Safety needs

Security and safety is what the home stands for. To satisfy these needs the housing legislation should consider and embody the following in their codes: safety and security needs can be categorised as: physiological and psychological. The physiological safety needs involve freedom from physical harm such as harmful bacteria, pollutants, natural disasters, behaviour patterns, materials, machines and various types of accidents (see Chapter Five, 5.3.2).

- Harmful bacteria and pollutants, Housing should minimise harmful bacteria by protection from enemies and get benefits from public utilities. The way to achieve these could be by more detailed codes of planning and building that would help to create a sustainable environment with a minimum amount of pollution and ecological damage. Harmful bacteria have many sources, such as poor waste disposal, stagnant water, bites from insects, etc. Having good modern toilets and clean kitchens with washable walls and floors and facing in a suitable direction for sunlight and good ventilation can contribute to health care (Chapter Eight). Pollution from industry and the automobile has a harmful effect on health.

- *Natural disasters,* Safety codes and regulations play a major role in formulating physically powerful housing that protects users from natural disasters. These codes and regulations should be developed and continually updated according to the latest empirical data and the best built technology available to minimise the effects of disasters. Stable structures should be erected of suitable building

construction materials, that are sound enough to prevent natural calamity, such as earthquakes, fire (for example, by having exit doors within buildings), storms, floods and hurricanes. External spaces should provide tranquillity and calmness, by separation from traffic and eliminating all the means of danger and pollution as in traditional neighbourhoods. (Chapter Three: 3.7.1; Chapter Four: 4.2; Chapter Five 5.3.2; Chapter Eight)

- *Accidents from materials and machines* Behavioural patterns cause many accidents inside and outside houses, exacerbated by materials and machines such as slippery surfaces, vehicles, electricity and children falling down from upper floors. All of these factors minimise physical safety needs. Planning and building regulations should embody codes that prevent accidents and increase personal safety. Such accident prevention could be achieved by: Segregating vehicular traffic to different lanes and speeds (cycle, cars and pedestrian) within neighbourhoods. The road width and speed should be arranged in a hierarchical form within residential areas, particularly for children, people with disabilities and old people's safety. Good materials for floors and pathways should be used that are slip-resistant in wet conditions and guard rails should be erected around danger areas such as stairs and ponds to provide safety for different users. Electricity causes many accidents and undermines safety if it is not designed with good materials and to high specifications. Thieves and other intruders should be keep away by planning and design solutions that increase natural surveillance, street lighting, paved streets with safe parking and the integration of streets. Increased social interaction inside and outside buildings could be encouraged, leading to people feeling safer. The design and planning of streets should be integrated, as space syntax analysis suggests, since burglaries are less frequent on the most integrated streets, and more frequent on the segregated streets. People are safer in spaces with more passers-by. Parking spaces should be provided with enough quantity and should be safe and shaded to protect cars. Empty streets may cause people to feel unsafe (see Chapters Seven and Eight). Mixed-use streets where different functions, different ages and people on varied incomes would help to increase safety and security. Workplaces located within neighbourhoods increase economical safety which leads to less travel, less noise and less pollution

(Chapter Six, 6.2.2). Location plays an important role in safety needs being integrated with the city centre by having a good street network and access to public transportation which makes people feel safe. However, being segregated and faraway from city life increases opportunities for crime (Chapter Seven, 7.2.4.5). Moreover, an increased ethnic awareness should be encouraged between people such as in Muslim cities, where mosques play an important role in achieving that. The psychological safety needs are having a sense of place, both geographically and socially. In a society, this could be achieved through acceptance of levels of privacy, awareness of the issue of territoriality and attaining a sense of place and legibility.

- *Privacy*: Psychological safety can be attained by having control over one's life which is achieved by privacy. Fundamentally in the built environment, privacy is the ability to have control over the flow of information to and from the immediate environment, whenever and wherever necessary. Planning and building legislation in Libya should have codes that respect the concept of privacy and reflect them in the design of spaces and urban areas, such as streets where the main doors of the houses should not face each other, public spaces and markets. The value of visual privacy among Muslims, in both indoor and outdoor living space, is of the greatest concern (the courtyard in traditional Libyan houses can be a good example). Clear, hierarchical distinctive spaces varying from public to semi-public to semi-private and private, could work well to achieve privacy at both levels inside and outside settlements. Moreover, by controlling the distances between blocks, the direction and size of windows, high parapets, balconies and overlooked by unsuitable building height as well as construction technology, using good soundproof building materials, would help to achieve audio-privacy (Chapters Four and Eight).

- *Prevention of crowding*: Crowding within a home occurs when there are too few living spaces that can accommodate all family members. It is a relationship between people and the amount of space they occupy. However, in Libya according to Islamic teaching, indoor spaces should have at least two bedrooms for children, one for boys and the other for girls and a guest room for male

guests separated from family living areas. This situation might contribute to minimising overcrowding.

- *Territoriality* is a part of psychological safety needs. Privacy can be a result of achieving territories. Characteristics that define territoriality are bounded, personalised and defended. Boundaries contain physical and symbolic types such as walls and fences which are physical forms or change in the surface materials, which are the symbolic form. People desire to personalise their spaces as a kind of individual expression by different forms such as decorating surfaces using symbols, exhibiting space using personal possessions, etc. (Chapters Eight and Nine). Defending territories take different levels of actions such as antagonism, being wary of strangers and keeping an eye on the street. Planning and building legislation can contribute to achieve territoriality by subdivision codes that can help to identify a neighbourhood. Traditional Islamic cities are a good source to learn from this approach, where districts are defined by main provisions such as mosques, public baths and schools which give a physically powerful sense of belonging.

- *Sense of place* has two aspects; social and geographical. Psychological safety needs can be achieved through a sense of place in its physical form. Being connected with a place increases the satisfaction of relationship needs; it also improves a sense of territorial control and leads to fulfilment of psychological safety and security needs. To achieve that, places should be physically different from each other. The planning codes should help the design of place to embody unique qualities instead of being a standard type. In Libyan public housing schemes as in the case studies (see Chapter Nine). Each dwelling and neighbourhood should have unique elements to create a sense of place and its own identity rather than them all being the same.

- *Work places*: The kind of transport and the distance to and from the work place plays an important role in economic psychological safety and sustaining the environment. The increase in traffic leads to more pollution, more noise, less social interaction...etc. Many studies have discussed the impact of this phenomena, which indicated that there are many negative traffic impacts, such

as reduced safety for other car users, pedestrians and cyclists, vibrations, noise, air pollution, fear (particularly for children), the prevention of movement in places, invasive parking and environmental damage and degradation (see Chapter Six). If there are shortages of workplaces within housing projects, that forces inhabitants to use different transportation, including their own cars for going to their workplaces and other necessary journeys. Providing workplaces within neighbourhoods, good public transport to serve people who rely on it as their primary mode of travel, such as the young, those without their own cars and the elderly, as well as choosing the right location for housing projects, enhanced by planning and building legislation which considers the importance of sustainable development (see Chapter Six), could help to avoid many negative traffic impacts and contribute to fulfil safety needs.

- *Legibility* or way finding or orientation could be defined as how both visitors and residents find their way around. Legibility is a way which helps people to satisfy their psychological safety. People can be prevented from getting lost by having a legible and imaginable physical environment, consequently forming cognitive maps in their mind in order to find their way (Chapter Seven). To obtain legibility in the physical environment in Libya, the planning and building legislation should make a significant contribution through codes that deal with legibility such as signs, graphics, colours, lights, furniture, etc. These are important for both visitors and residents to find their way easily around streets, buildings, public flats and private houses at neighbourhood level and at city level.

3. Belongingness needs

The need for belonging could be fulfilled by having helpful relationships and an identity as a contributing member of a number of groups that might be biological or sociological such as a being a member of a kinship system or a set of organisations (Chapter Five 5.3.3). There are other things that contribute to having a good sense of belonging and which improve people's abilities to fulfil their needs for affiliation, for instance, belonging to a place, social networks, activities and events. These needs can be achieved by having codes that help to provide a clear identity at the level of

neighbourhood and dwelling, having places for socialisation and communication with other groups and mixed land use. The following areas should be considered in new housing legislation to fulfil belonging needs which are:

- *Belonging to a place* People require to belong to a place to fulfil their needs for security as well as affiliation. Having a strong association with a specific geographical area such as a neighbourhood, a city, a country, etc. is one aspect of fulfilling the need for security as well as affiliation. Belonging to a place could be achieved in housing through having places that invite people to socialise that bind people together such as markets, schools, sport clubs, multipurpose halls and play areas in mixed land uses that have good landscape and shaded places in hot climate countries and give a clear symbol of identity (Chapter Five, 5.3.3). The significance of landscape and location play important roles in giving an identity to a place and lead to feeling of belonging to a place (Chapter Seven). Adopting prototypical design in the new public housing in Tripoli has failed to give a clear continuity of traditional socio-cultural and physical symbols of identity, poor local facilities, new construction material and neighbourhood layouts (Chapters Eight and Nine).

- *Social networks* A person needs to have contact with a family and a kinship system to feel that this desire can fulfil his need for belongingness and love. The kinship system is clearly reflected in the physical layout of settlements and houses such as in traditional Libyan cities where it is clearly to be found in extended families and close relatives all living in one large house with enough number and size of internal spaces and it has the opportunity for future extension as well as most neighbours are from the same tribe. In Libya it is very common for a person to have a strong tie with his tribe and his extended family. Particularly, this is evident at social events such as celebrations and times of sadness by having his residence near to his relatives so that enhance a person's prestige in the society and fulfils the need for belonging (Chapter Eight). Membership of a kinship system leads to the flow of a set of obligations to other people and control of behaviour. This is clearly found in traditional Muslim neighbourhoods (Libya included) where the elderly people have the right to direct and control the behaviour of children within the streets and have the

ability to solve many social problems. This is as an application of Islamic teaching. The spatial configuration of traditional neighbourhoods and settlements in Libya that have compact shapes with unique hierarchical external spaces, has helped to increase social interaction, offers social homogeneity and binds people together, thus gratifying the need for good affiliation (Chapter Two, 2.5.1; Chapter Three, 3.6; Chapter Seven, 7.2.4.1; Chapter Eight).

- *Activities and events* are very important to people as a tool to fulfil the need for belonging. These events and activities can bring people together in internal and external spaces thus establishing a sense of temporary group identity. All societies have events but they vary in nature in different cultures. The events could be sports, seasonal celebrations or deep-rooted religious ceremonies. It is important to acknowledge the importance of such events in people's lives. The spatial configuration of dwellings, neighbourhoods and settlements should have suitable places to accommodate such events and activities. In Libya there are several social, traditional and religious festivals and celebrations. The main events are weddings, child birth, *Haj* (Pilgrimage), death and religious feasts. Religious feasts mainly take place inside mosques where people gather and celebrate but some of them occur in dwellings such as *Aid El-Fetr*, that comes after *Ramadan* and *Aid El-Adha*, that comes after *Haj*. The spatial hierarchy of streets that provide a clear separation between private and public life is the significant thing that people miss in their current public housing in Tripoli due to the implementation of building and planning legislation and the adaptation of the western concept of neighbourhood where the streets become wider and are mainly constructed for cars. Cul-de-sacs and squares are the places which neighbours use for gathering at celebrations such as weddings and festivals, moreover, they are suitable places for children's play areas and are considered to be an extension of the house's private space.

- *Elderly people's needs*: The major, important role of elderly people in Libyan society is in teaching and modifying children's behaviour and in solving social problems within their neighbourhoods. Moreover, extended families need to be maintained by enhancing the role of the elderly within external and internal spaces. Islamic teachings give more consideration to taking care of elderly

people as is mentioned several times in the Holy Quran. Thus, special needs for elderly people have to be met, as was mentioned by some of the respondents and as was addressed in Chapter Eight. Special treatments are needed for the elderly in most internal and external spaces, such as shaded sitting places, places to spend leisure time and easy access to mosques. A high proportion of elderly people in Libya are still living with their immediate family members, particularly in rural areas. However, some obstacles were observed in the Tripoli case studies, such as the organisation of spaces inside flats is not suitable from a socio-cultural view, in terms of privacy, bedrooms and bathrooms. For parents living with their married adult children, this situation becomes another obstacle to their practising Islamic teachings. Public housing in Tripoli can be effective in encouraging smaller extended families, which in effect, discourages co-residency between elderly parents and their adult children. People are forced to live far away from their immediate family members. On the other hand, Libyan traditional houses encourage married children to live with or to near their parents since the traditional house has the potential for future extension and maintaining the traditional way of life.

- *Mixed land use*: Mixed land use is a tool to achieve maximum social interaction and integrate areas by inviting people to use spaces in a good way and to spend more time in them which mainly occurs in external spaces. Mixed use activities within streets and the diversity of land uses increases the presence of people in the streets, increases the time available for social activities and community interaction and ensures socially integrated areas. Mixed land use could be achieved on two levels: mixed-use streets and mixed-use buildings. The mixed use on a site or a particular area is where there might be more shops, offices, houses, coffee shops, and educational institutions. These activities work together horizontally, usually at ground level to formulate integrated, safe and sustainable environments. At the building level, a number of activities are contained on different floors in the one building. Planning and building legislation play important roles in making the external spaces work positively or negatively at mixed land use level. This legislation directed the urban design to formulate spatial configuration of an urban layout by destruction of land use and zoning by

laws. Because of that, more emphasis on studying this legislation should assist developers to adopt designs for new developments that achieve social goals.

- *Customs and way of life*: For successful spaces, customs and way of life for any society should be considered in their external and internal housing spaces. Socio-cultural needs can be fulfilled within different physical spaces at neighbourhood level such as; squares between houses, mosques with multipurpose halls, places for elderly people, gathering places which neighbours use for celebrations such as weddings and festivals and open markets. These matters are one of the human needs that lead to strong social relationships among inhabitants. The way these spaces are organised within neighbourhoods' layouts plays a vital role to fulfil the socio-cultural needs.

Some matters related to customs and way of life that should be perceived in housing, such as co-operation, good relations and association that have deep roots in the customs, traditions and way of life of the Libyan people which they have inherited and which have a high value, as well as their being a direct reflection of Islamic teaching, such as support of poor people, visiting the sick, co-operation at sad and happy events and kindness to neighbours, all aspects which bind Libyan society.

Celebrations (happy or sad), are among those activities which are related to customs and the way of life. The respondents use different places, such as a tent, neighbour's flat, own flat, mosque hall, roof of the block, outer court or father's house where these activities can occur. Often a tent is set up on free space in front of the block, which is a very common practice in Libyan society to use such a space as a temporary location. This practice needs to have enough free space near the flats and this feature should be considered in any future housing layouts.

The roofs of Libyan houses are commonly used to accommodate more visitors at wedding celebrations, particularly women and in the summer time because the flats become too overcrowded to accommodate many people. Generally, the external and internal layout of the public housing should incorporate a contemporary reflection of cultural values and living patterns of the prospective population. The designing of

external and internal spaces should start from an understanding of the meanings which such spaces hold for those who use them and relate them to their way of life.

- *Location*: The location of housing projects plays an important role in the degree of satisfying users' needs negatively or positively. Planning and building legislation should address the significance of the location to avoid many problems that could occur from segregation of neighbourhoods and to fulfil belonging needs. Access to city life can be considered as important for most people, and the location of neighbourhoods where people live, as well as transportation links, play an important role in making people less segregated because usually the city centre is the heart of any city where you find several things that people need, such as commercial, social places, public offices, institutional services, leisure places…etc. Good links to the city centre that make it easy to reach, either by a good street network using public transport or by walking, leading to reduced travel time, are the main reasons to make a city liveable, busy, safe and active for people, as was discussed in Chapter Seven. To be far from city life or other neighbourhoods has a negative effect, such as increasing travelling time and segregating people from relatives and friends which is a basic human need (Belonging and love needs) as illustrated in Chapter Five.

- *Organisation of spaces*: Planning and building legislation plays an important role in formulating and organising the internal and external spaces of dwellings and neighbourhoods. The legislation has an indirect effect on family and the society, its way of life, and the way it organises the relationship between them within the internal and external spaces. The effect could be positive or negative, depending to what extent the legislation embodied and respected socio-cultural values, climatic considerations, economic, environmental issues and human needs. The unclear boundary between private and public spaces within the layout of residents' blocks leads to uncontrolled external spaces around the blocks, physically and socially and these become a source of many problems. This situation is opposite to the housing layout of Tripoli Old City, where the boundary is clearly defined (see Chapters Two, Four and Seven).

- *Mosques with a multipurpose hall* play an important role to achieve maximum social interaction. Mosques and markets are important features that respondents refer to (Chapter Eight). The role of the mosque goes beyond its religious function, in fact the mosque has a social purpose that unites Muslims within the community and strengthens their social relationships. In the traditional Muslim environment, the mosque achieved the ideal use by serving as a multi-purpose space for prayers, education, political decisions, and several celebrations. In most Libyan cities, the places near the mosque are the preferred places for elderly people where they gather to chat, exchange news, reply to any strangers' needs and observe children to control their behaviour, while awaiting prayers.

- *Markets* play an important role in enhancing economic and social interactions that can minimise people's isolation from each other. Markets are places were people gather, chat, meet each other and enjoy a good time. In traditional cities, Islamic law had a major contribution to make in organising the market within a city's layout, according to the kinds of activities that were happening in them as mentioned in Chapter Four. The main criteria's of their organisation was to prevent harm. Different kinds of markets, such as covered markets, open markets and strap markets with small shops and accessible to residents and strangers are found in Tripoli Old City. On the other hand, in the new housing projects, they suffer from such places in their original layouts and the residents are forced to build illegal small strap shops and to have open markets such as in the case studies 2 and 3 to fulfil their needs (see Chapter Eight, Q27).

4. Esteem needs

These needs can be achieved by having codes that achieve prestige, status, dignity (good image) and social mix to avoid stigmatisation at dwelling, neighbourhood and city level. To fulfil the esteem needs three important areas should be taken into account:

⇒ Provision of learning opportunities for one's personal development such as libraries, museums, workshops, etc.;

⇒ Opportunities to display the skills (stages for performance, communal spaces); and

⇒ Display of the symbols of success to oneself and others.

Self-esteem needs when satisfied, lead to feelings of self-confidence, worth, strength, capability and adequacy of one's being useful and necessary in the society. The following present some areas that lead to satisfying esteem needs:

- *Social interaction* between people is important to get feedback from others which enhances and shapes a person's esteem. Places where people live can give a good feeling of pride and lead to satisfying esteem needs (see Chapters Seven, Eight and Three).

- *Housing statues*: The image of the place, its dignity and reputation can contribute positively if it has been maintained properly. Usually people are judged by the place they live in. The quality of the design of public spaces gives a neighbourhood or a precinct its status (see Chapter Three, 3.6 and Chapter Eight).

- *Building types*: Esteem needs can be met in one important way, which is by the displaying of skills. People are evaluated by displaying their skills in different ways. For some people, evaluation of the public display of their skills is a basic way of achieving esteem needs, for others, a sufficient way is having the opportunities to display their own skills to themselves. Opportunity to display skills is offered in all social and physical environments but at dissimilar levels, for example, a rich environment is where many opportunities, both formal and informal occur. Formal settings include places such as classrooms, offices, athletic fields and theatres. On the other hand, informal settings are those not specifically designed for performance but which may involve them as kitchens, parks and playgrounds. Standardisation of housing styles prevents esteem, growth, motivators, achievement and power needs to be gratified. A variety of opportunities should be provided in the everyday world so that individuals have a chance to display their own abilities.

- *Participate in design process*: It is very important for designers to recognise the importance of people being able to shape their environments to meet their own

activity and aesthetic needs in building their self-esteem. People usually like personalising their houses particularly if the legislation, construction system and design allow them to do so, as was discussed in Chapters Eight. This is achievable in private houses were owners have the ability to participate in the design process (see Chapter Three, 3.6).

- *Land uses*: can be given a good opportunity to fulfil esteem needs if it's employed successfully. Diversity of land uses and mixed-use activities within streets, which increases the presence of people in the streets, increases the time available for social activities and community interaction lead to opportunities to display the skills and learning opportunities, which gratify esteem needs. Traditional urban environments, such as Tripoli Old City have helpful mixed-use areas and high density that achieve some social goals and create an urban vitality and give a good example for mixed land use (see Chapters Two, Four and Eight).

- *Leisure spaces and gardens* are other areas which can give opportunity to display skills and learning, such as swimming in the sea or swimming pools, participate in play of different compositions in clubs and guide tourism groups. Housing legislation should address these important areas and help to have them at levels of neighbourhood and city to gratify esteem needs.

5. Cognitive needs

Cognitive needs can occur in both formal and informal learning environments. These needs are important for all people for their growth. Housing legislation should address these needs to improve people quality of life through some areas, as follows:

- *Learning facilities* that help to have formal and informal learning environments within cities and neighbourhoods play a major role to fulfil the cognitive needs for differently aged people. The formal learning occurs in places such as schools, universities, etc. and under supervised opportunities for practising skills. The informal learning or semi-formal learning is concerned with getting knowledge from one's everyday experiences that come as a result of talking with

others, watching television, exploring the world, participatory landscapes etc. Places such as libraries and museums can provide semi-formal learning but the informal learning may take place anywhere. Planning and building legislation can contribute to learning opportunities by having codes that help to provide places within walking distance in every neighbourhood such as schools, playgrounds, internet cafes, public libraries and places where people gather to exchange experiences, explore and test their abilities. All of these issues can be clearly enhanced by planning and building legislation. An age mix within a variety of housing types could offer a good opportunity to fulfil cognitive needs through the physical environment and social aspects.

- *Children play areas* are important places whether indoor or outdoor. Children's play areas are not only places for play but to exercise children's bodies and to learn from play, which is an important, basic human need and one which encourages cognitive development and reinforces self-confidence (see Chapter Five). The indoor play area for younger children, such as the living room or elsewhere in the flat is a safer and more secure place because mothers can keep an eye on their children, not let them get involved in fights or mix with bad company. The lack of playing areas, indoors and outdoors, is the push factor for children to play in the streets which makes them vulnerable to many dangers. Children use the streets as play areas due to lack of special play areas and this situation can lead to many car accidents, particularly for children who play in the main roads. Lack of play areas within neighbourhoods that have insufficient facilities lead to children playing in any empty available areas which could be unclean. This situation can lead to their having health problems. Specific places for children such as outdoor playgrounds should be provided within the locality. These places should be easily accessible and offer flexibility to move freely and safely and under adults' supervision to control their behaviour. Planning and building legislation in Libya should study the importance of this issue in outdoor and indoor spaces.

- *Leisure spaces and gardens*: Leisure places play a vital role in gratifying people's growth needs at different ages. Leisure and recreational facilities are an important element in the life of residents and bring vitality and attractiveness

to districts of any city. Leisure places are the seashore, clubs, public parks, tourist places, etc. These places provide people with comfort and relaxation, cognitive needs and satisfy their aesthetic needs as well as the fact that these places usually offer many social, sport and enjoyment features. These places are needed by all people to fulfil their need for leisure and reduce the stress that comes from the daily routine. Good quality and easily accessible community and leisure facilities are a vital element contributing to the quality of life for local residents. These facilities are diverse in nature and are therefore provided and run by a number of different agencies, each with their own strategies for delivery and their own set of objectives. Leisure facilities attract visitors, and are capable of generating significant amounts of traffic. Siting these facilities in town centres, which are readily accessible to public transport, can help to reduce dependence on the car and can contribute to the vitality and viability of town centres, in particular, by supporting the economy, thus they can achieve sustainable development (see Chapter Six). Arts and cultural facilities cover a wide range of leisure activities, all of which play an important role in improving people's quality of life. In addition, they provide opportunities for life-long learning, assist in reducing social and economic barriers, and support economic regeneration and wealth. These facilities should be accessible to both residents and visitors and should consider, in terms of their way of use, local socio-cultural issues, such as the need for privacy and segregation between males and females. Planning and building legislation should address the importance of providing these facilities.

- *Preserving the environment* is the main goal for many countries these days. The environmental problems are pollution, dust, noise, less care taken for outside cleanliness, and bad layout. Ecological sustainability aims to protect resources, where preservation of the environment is deemed essential for its protection as a valuable heritage to the extent that it can meet the housing needs of future generations.

6. Aesthetic needs

Aesthetic needs are mainly concerned with beauty, which is a very broad topic, differs culturally and is based on individual taste. Aesthetic needs are amongst the most influential components of personality development. It is mainly related to building design, nature, gardens, open spaces, decoration and building materials. People also connect aesthetic needs to low levels of overcrowding, spaciousness, and bright colours. Some activities such as art and music, contribute to fulfilling this need. Psychological comfort can be seen as a result of satisfying these needs. The aesthetic can be natural or artificial. Aesthetic pleasure can be sensory, formal or symbolic. The sensory aesthetics experience is related to perception and senses. Perceiving aesthetic pleasure through sight, hearing, smell and touch can enrich the experiences in the environment by using these senses in various ways. But sight could be the most important one where the aesthetic quality of the environment can be evaluated through it. Sight plays an important role in reviewing the aesthetic quality of the environment such as the impact of colours one observes, which depends on how, where and when they are perceived. On the other hand, touch is a tool for experiencing space by using the hands and feet, for example, textures of walls, floor materials and paths can be rough, smooth, soft or hard. Sounds and smells are connected to specific places such as markets, playgrounds, coffee shops, restaurants, seashore etc. and give specific identities to such places. Activities that occur in spaces, as well as materials, height and shapes are sources of producing various sounds as sharp or faint or echoing.

Formal aesthetics is concerned with the pleasure derived from the geometry of the environment. The environment consists of several geometric patterns. Formal aesthetics can be achieved with geometry, patterns and lines in space and their association to each other with their composition. The composition can be analysed in terms of its proportions, rhythms, balance points and expressions. The order can be simple, such as bilateral symmetry or complex, such as helical and spiral forms. Libyan traditional housing orders are simple in their outside elevations, however, they are very rich and full of decoration in their inside spaces, such as courtyards and sitting rooms.
Thus planning and building legislation may contribute to satisfying aesthetic needs by having codes that help inhabitants to offer a chance to influence the appearance of their own dwellings. Having unity in a housing environment by maintaining the sense of place as well as diversity by providing a varying mix of housing typology can be

another way that gives the whole place a special character that can be remembered and provide aesthetic satisfaction.

- *Building materials* are commonly used to gratify the aesthetic needs in the built-environment. Different building materials, such as stone, ceramic tiles, timber, and gypsum are employed for decorating housing surfaces using symbols, arches and *mushrabiyah*, which contribute to add aesthetic value to housing as was discussed in Chapter Eight, Section 8.8. Building materials offer aesthetic pleasure through sight, the impact of colours one observes and touch, as a tool for experiencing space by using the hands and feet, for example, textures of walls, floor materials and paths can be rough, smooth, soft or hard. Housing legislation should encourage the designer to employ building materials which gratify the aesthetic needs in the built environment.

- *Water* is a good object which can be used for aesthetic purposes in external and internal housing spaces, such as fountains in courtyards and pools in gardens. The sound of falling water gives sensory aesthetic pleasure which can come from nature, such as waterfalls or it can be artificial, such as fountains in open public spaces or in internal spaces as living rooms or courtyards. In some spaces, water is employed to gratify aesthetic needs by having it in fish-glass boxes adding to it artificial lights. Housing legislation might employ water to fulfil aesthetic needs.

- *Preserving the environment's good landscape* to improve environmental issues, such as by having more parks, planting more trees, general cleanliness and complete utilities at neighbourhood level, having more green areas and leisure places. It is important to add an ecological dimension to the production and consumption processes of housing when applying the environmental concepts and principles to housing. For Libyan people, trees have a high aesthetic value, they provide shade for elderly people to sit and chat, a place for children to play and they can be used as leisure shaded areas. Furthermore, trees contribute to moderating the climate by freshening the air and filtering pollution, thus contributing to environmental sustainability (see Chapter Six).

- *The same building height* can be used to achieve unity which brings harmony to the city skyline and adds aesthetic value to the city. Having unity in a housing environment by maintaining the sense of place as well as diversity but with the same building height by providing a varying mix of housing typology, can be another way that gives the whole place a special character that can be remembered and provide aesthetic satisfaction.

- *General cleanliness and maintenance* with complete infrastructure are other matters that would improve the aesthetics of neighbourhoods, which would lead to having a comfortable life and enhance the feeling of belonging to the place as discussed in Chapter Five.

- *Good quality environmental housing design*, can offer on a human scale, bright colours using formal aesthetics, which are concerned with the pleasure derived from the geometry of the environment. The environment consists of several geometric patterns. Formal aesthetics can be achieved by geometry, patterns and lines in space and their compositional association to each other. The composition can be analysed in terms of its proportions, rhythms, balance points and expressions. It is usually done by a designer who imposes a pattern, geometry, on the layout of the environment to give some order to it. The order can be simple, such as bilateral symmetry or complex, such as helical and spiral forms. Housing legislation may contribute to satisfying aesthetic needs by having codes that offer inhabitants a chance to influence the appearance of their own dwellings.

7. *Self-actualisation needs*

Self-actualisation might be achieved in dwellings and neighbourhoods by employing planning and building legislation which helps the designers to offer spaces for learning opportunities as well as which are rich in the provisions for cognitive and aesthetic needs at neighbourhoods and dwellings' levels.

- *Participate in designing and controlling housing*: Self-actualisation people need to be involved in the decision-making processes which can be achieved in housing legislation by codes that let local people participate in designing and controlling their housing's internal and external spaces within dwellings, housing blocks and neighbourhoods, which give them the opportunities to pursue these needs and contribute to improve the community and their built-environment.

- *Flexibility in the design* of housing could offer a good opportunity to gratify self-actualisation for inhabitants, but if not, they are given insufficient choice by designers, if they have employed inflexible structural systems, such as the prefabricated and unsuitable design of spaces, which limit users' changes. The flexibility of housing could be achieved through having sliding interior walls, which would offer flexibility to modify the space to meet different residents' needs, by moving the walls to increase the space or adding them to create a new space. Housing legislation should offer flexibility in internal spaces and respond to family needs.

- *Places for learning opportunities* which have a direct effect on the self-actualisation needs of people. The environment, which is rich with learning opportunities, such as schools, colleges, universities, museums, libraries, etc. has more ability to motive and gratify inhabitants' self-actualisation needs. Learning opportunities can fulfil self-actualisation through the process of exploring and fulfilling one's full potential. The desire to test and fulfil one's capabilities, master new skills and seek new experiences. It is very important to offer places for learning opportunities within neighbourhoods and cities for people to help them to fulfil their self-actualisation needs. Housing legislation should address offering these places.

9.2.3 Implementation

Having identified important areas in the above subsection, this subsection presents a suggestion for a mechanism or a system to implement the framework. From the survey

results it can be noted that there are many contraventions of planning and building legislation, as a result of weakness in the implementation of the law.

The implementation system of current Libyan planning and building is limited to municipality policy and planning committees and only for the design and construction of private buildings inside the master plans of the cities, where the planning and designing of public buildings are controlled by a central committee. Thus, it is necessary to find a suitable system to implement the framework benefiting from the Islamic law system applied in Tripoli Old City, where the control system and participation of local people in sharing the responsibility of looking after their environment within local streets are good examples of that.

The study presents some suggestions for the right implementation of the framework as well as to activate it. These suggestions are as follows:

- The local people should be given responsibility to implement the housing law within their local external spaces by their own maintenance and management of them. Semi-private and semi-public external spaces should be left as part of the territory, they should be used as an extension of the home, which inhabitants should look after, and meet and receive their visitors there. Otherwise they feel insecure, anonymous and the interconnections between the residents are lessened. The participation of local people in implementing the housing law would lead best serving their cultural and human needs and sustaining those values that are most precious to themselves.

- There should be a committee consisting of one member from every official body, such as municipality, education, housing, communication and the Syndicate of Engineering to implement the housing law for new housing projects during the design and construction processes within every city.

9.2.4 Control and sustaining systems

The framework will only work properly in the long term if they are supported by controlled and sustaining system. This subsection illustrates and suggests mechanisms to control and sustain the housing law framework.

Many governmental and local official bodies should have roles in the control and sustain system, such as General Planning Council, Ministry of Municipality and Housing, communities (the People's Committees of the regions, *Sha'biat*) and local people of every neighbourhood, individuals, educational institutions (universities, colleges and institutes), the Engineering Syndicate, architects and planners and the media. Co-ordination between the aforementioned bodies is needed to control and sustain housing law. Top-down and bottom-up participation is necessary to sustain the housing legislation to minimise any negative effects, such as flouting and breaking the law.

The lack of co-ordination between the different executive departments during the undertaking of projects under construction (sewerage; water supply; electricity; telephones; etc.) causes many problems which reflect on the quality of housing and force people to contravene planning and building legislation as was mentioned in Chapter Eight.

The media should be used as a communications resource and a source of dissemination regarding the importance of planning and applications and should play a part in sustaining the laws and regulations by reporting on key issues and the role of local people's participation in all processes. Islamic teaching encourages people to manage their local built environment and take full responsibility for the application of aspects of the concept '*La dherer wa la dhirar'* (No harm, whether for your profit or not) to prevent different kinds of harm, which has played a significant role in directing the progress of social life in Islamic cities.

It is important for communities as well as individuals to be involved in further contact with housing legislation process to put these laws into effect, to sustain and evolve their moral, religious, symbolic and cultural values. The study suggests that there should be a strong punishment system for people who contravene the housing law.

9.3 Section Two: Tripoli case studies

9.3.1 Reasons for choosing the case studies

The case studies were chosen because they are the main public housing projects in Tripoli City that were built in the late Seventies-mid Eighties and they represent different types of construction systems and blocks of different height. Moreover, the site plans of these three projects are located in different parts of the city. The author sees them as important to evaluate the influence of building and planning legislation on public housing.

The information in this section is based on the author's field observations that were undertaken between July and August 2002, and photographs, information collected from official documents such as reports and drawings from the Ministry of Housing, Ministry of Municipality and other sources.

9.3.2 Case study 1: *Hay Alakwakh*

This section views and examines case study 1, *Hay Alakwakh* in order to give examples of the practical application of some of the most important research framework areas to Tripoli public housing projects. As well as to explore how inhabitants deal with the internal and external spaces of the housing project in the context of the thesis findings framework and to try to understand the real situation of public housing.

Hay Alakwakh takes its name from the original character of the project site. There were many hovels built on it until the mid-Seventies when all the hovels were demolished and replaced by high-rise residential blocks. The project is located in the southern part of the Tripoli master plan and the west side of the project tower is over on the Tripoli international airport road (see Figure: 9.1). The site plan is located nearly 8 km south of Tripoli city centre with a total area of nearly 100 hectares, including all the buildings and urban spaces. The project has 1996 flats with a density of 20 flats on one hectare. The contractor was Aramkom Romanian Company and the project was designed in co-

operation with the contractor and Ministry of Housing architects. The work started in 1979 and finished in 1985.

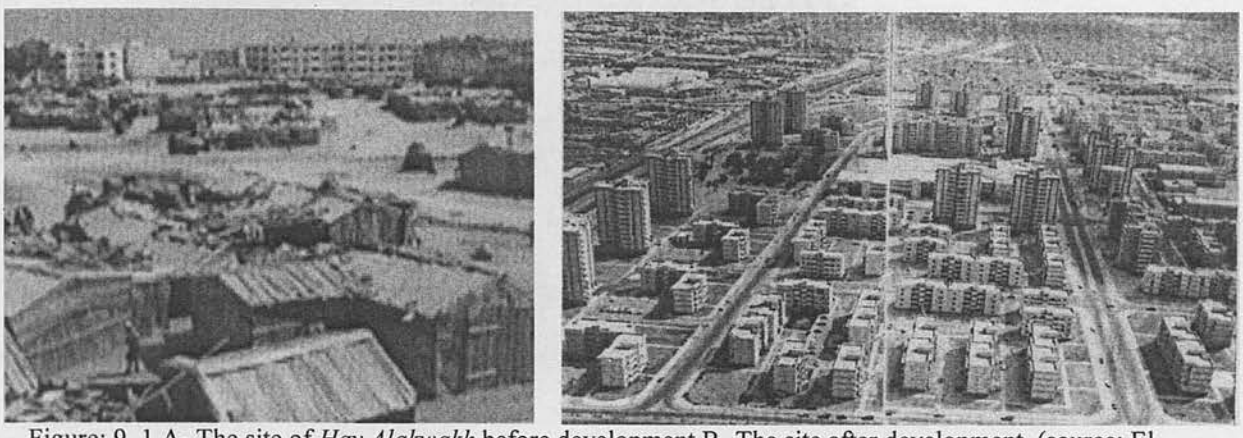


Figure: 9. 1 A- The site of *Hay Alakwakh* before development B- The site after development. (source: El-Fortea: 249)

9.3.2.1 *Hay Alakwakh* site plan

The site plan was designed as a neighbourhood with central public facilities such as schools, a mosque, a shopping centre and public offices. Different types of housing blocks were distributed on the site. These blocks contain four, eight and twelve floors with two and three flats on each floor. The site is a flat area with very little contour lines and is well connected to the city centre by a road network. On the south and east, the site is surrounded by minor service roads, and on the north and west, bounded by two main roads: *Abu-Sleem* road and Tripoli international airport road in that order (see Figure: 9.2). The following explains the implication of the thesis' findings framework, which have been distilled from the first three parts of the research.

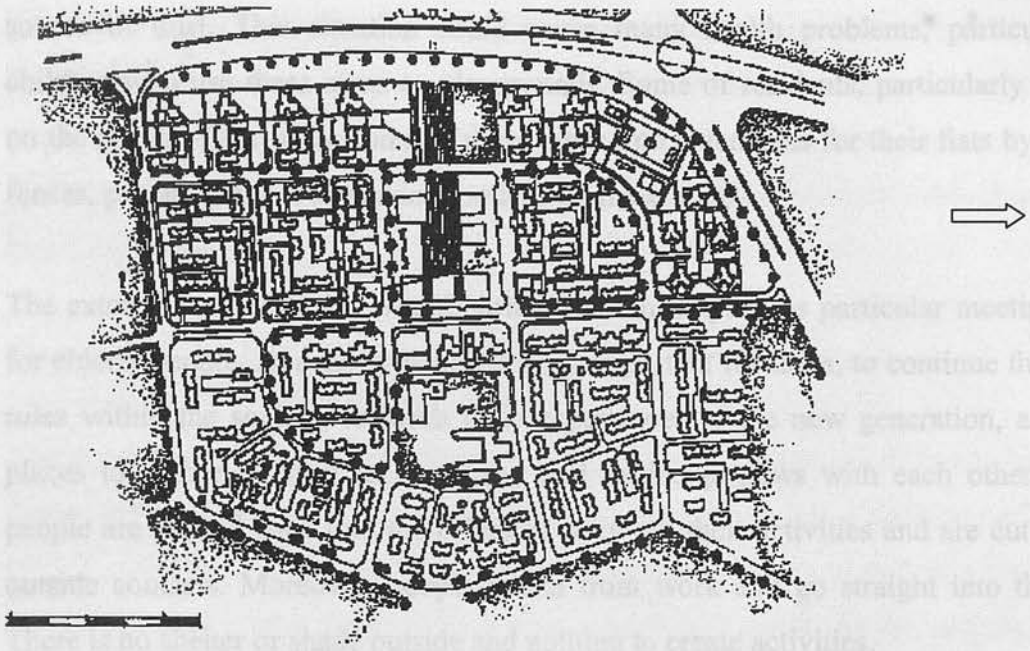


Figure: 9. 2 Site plan of *Hay Alakwakh* project (source: Ministry of Housing documents).

The site plan concept was designed to follow the western idea of neighbourhood as was discussed in Chapter Three of this thesis, where the streets are wide, straight and without hierarchical order as in traditional Islamic cities (see Chapter Seven). These kinds of streets generate more danger for pedestrians, particularly for children and elderly people and cause pollution as well as noise which lead to health problems as mentioned by the interviewees (see Chapter Eight). The housing blocks are outward looking and distributed on the site without considering whether the orientation is suitable for the local climatic conditions and offers privacy. The layout of the housing blocks plays an important role in capturing solar energy in winter and providing cool, shaded spaces in summer, thus it can save more energy by reducing the need for air conditioning and lead to sustainable housing, such as compactness of shape and the courtyard in traditional houses (see Chapter Six). Having blocks that contain four, eight and twelve floors mixed together on the *Hay Alakwakh* site, causes lack of privacy that comes from the high blocks overlooking the lower ones as a result of applying zoning codes (see Chapter Four, Code 44) and that has a negative impact on people's social life.

The site shows that there are many empty areas that have been left between the housing blocks as public spaces without any treatments, such as planting or paving. These areas become a source for environmental pollution as places for gathering rubbish and as a

source of dust. This situation could cause many health problems, particularly for children who use these areas as playgrounds. Some of residents, particularly who live on the ground-floor make some of these areas into extensions for their flats by building fences, private garages or making gardens on these areas.

The external spaces of this neighbourhood are inadequate as particular meeting places for elderly people, an activity which is very important for them, to continue their social roles within the society, to teach their experiences to the new generation, as well as places to gather or meet to chat, play and exchange news with each other. Elderly people are pushed back into their flats to carry out their activities and are cut off from outside contacts. Moreover, people return from work and go straight into their flats. There is no shelter or shade outside and nothing to create activities.

It was observed on the site that there is no play equipment and specific playgrounds for children to play. Play areas are very important for children as a part of growth need and to enhance feelings of belonging, socialisation and leisure (see Chapter Five). The lack of children's play areas could have a negative impact on their mental health and deprive them from having an important need met. The Libyan climate encourages external activities due to warmth and little rain. However, the site's external space is poorly organised; cars are the main users not people. Residents like to take their cars to the entrance of their housing blocks, particularly when they are bringing back heavy goods or shopping and for safety reasons. It is dangerous to stay long outside, particularly for younger people or the elderly.

A mosque hall is also very important for people for social reasons, as mentioned by many respondents. The mosque hall is used for sad celebrations, to solve social problems and religion celebrations. However, the site plan of the neighbourhood was designed without considering the importance of the mosque hall and its role in binding the local society. In the three case studies, to gratify a part of social need, people construct multi-purpose halls close to some of the local mosques.

The site plan of the neighbourhood suffers from having few workplaces for its residents and the existing ones are limited to public offices and local schools. Proximity to the workplace plays a vital role in motivating people to stay in their neighbourhood as

mentioned by respondents (see Chapter Eight). The proximity to the workplace has positive points, such as less travel by car to the workplace, less time taken for this and less pollution caused. This reduces stress on people, reduces car use, and increases social activities and interactions. These are the main aims of sustainable development (see Chapter Six).

9.3.2.2 Residential buildings

The residential blocks are distributed on the site in the form of different heights, 12 floors, 8 floors, and 4 floors. The 12-floor housing block has 3 flats on each floor, 2 lifts, 2 staircases and a room to gather rubbish (garbage) connected to a room on the ground floor by a tube. Every floor has an area of 650 metres square and each flat has an area between 130–145 metres square. The flats in these blocks have 2 bedrooms connected with 2 private balconies, a guest room with an additional balcony and guest WC, a living room with a balcony and a small kitchen and bathroom (see Figure: 2.9). Six of the 12-floor blocks were located at the west side of the site where the Tripoli international airport road and another five blocks are located around the central area of the project, while the 4-floor blocks are on the edges. The following illustrates the implication for the thesis' findings framework, at housing block and dwelling unit levels.

The design of housing blocks generally in this neighbourhood is characterised by shared facilities, such as lifts, staircase and a main door to the block. These shared facilities become a source of many problems for the residents of the block, such as noise, less care for maintenance and awareness regarding the cleaning of the staircase. These problems contribute to weakening the relationships with neighbours which detracts from meeting safety and security needs, from both a physiological and psychological point of view, one of the basic human needs, as demonstrated by Maslow (see Chapter Five).

The number of spaces within the flats in this neighbourhood are not enough to accommodate family members, as was mentioned by most respondents, where the number of bedrooms are limited to two or three which are not suitable for large or extended families and that leads to overcrowding and a lack of privacy, as well as young children not having areas for play. Residents are forced to make internal alterations to

solve the problem (see Chapter Eight). Libyan planning and building legislation codes, such as setback requirements, site coverage, building height and density contribute to limiting the number of spaces. The area of the kitchen within these flats are mentioned by respondents as too small to be suitable for preparing Libyan meals which need more space. According to Act 5 (1969) Code 25, the minimum area of a kitchen should be 16 m^2 (see Chapter Four). This lets the designer create a minimum area for economic reasons, without taking into consideration people's local requirements.

Windows and balconies within the neighbourhood's flats are mentioned by many respondents as unsuitable; they fail to respond to socio-cultural and local climatic conditions. The design of the windows comes as a result of applying Code 21 of Act 5 (1969), which related only to a room's area for light and ventilation (see Chapter Four). Thus, the window area should be designed according to the local climate and socio-cultural rules as well as light and ventilation considerations. The roof parapet in the housing blocks are also mentioned as unsuitable for residents socio-culturally, due to the lowness of its height, 90 cm, as a result of applying Code 20 of Act 5 (1969) which does not provide sufficient privacy for women to carry out their activities on the roof.

Building materials play a key role in creating sufficient thermal conditions in the internal spaces. The choice of building materials should be addressed very carefully to achieve good thermal conditions. Respondents stated that the building materials which were used to construct the neighbourhood housing blocks, were mostly unsuitable for the local climate, such as cement blocks that were used in internal and external walls, with thicknesses of 15 to 25 cm, without having heat insulation and concrete roofs that have the ability for more heat gain, which force residents to use air-conditioning units to offer comfortable internal temperatures and leads to more cost as well as more energy consumption. The thickness of the walls is subject to applying Code 20 of Act 5 (1969) as illustrated earlier in Chapter Five.

The different height of the housing blocks and their being close together, as a result of applying zoning codes (which characterises the *Hay Alakwakh* neighbourhood) causes a lack of privacy, one of the basic human needs and it is a very important issue that was mentioned by many of the respondents (see Chapters Five and Eight) where the twelve-storey housing blocks overlooked the eight and four-storey blocks and prevented the use

of some spaces, such as the roof and balconies, forcing the inhabitants to make alterations and keep their windows closed, since they are overlooked all the time.

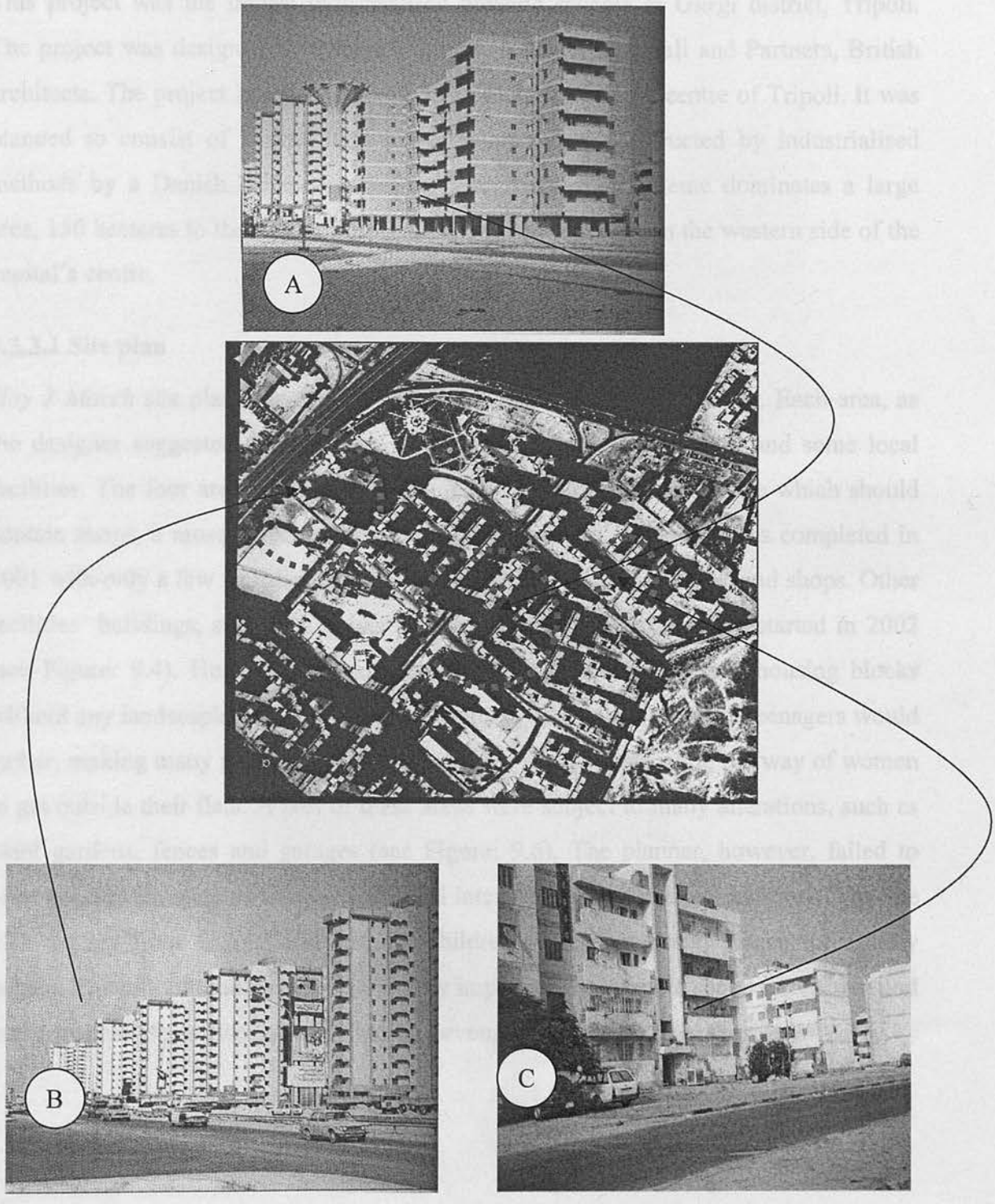


Figure: 9. 3 *Hay Alakwakh* housing block types and their position on the site plan. A- Eight storeys. B- Twelve storeys. C- Four storeys. (Source: The author).

9.3.3 Case study *2, Hay 2 March*

This project was the largest industrialised housing scheme at *Gurgi* district, Tripoli. The project was designed by Robert Matthew, Johnson Marshall and Partners, British architects. The project is near the coast, some 6km west of the centre of Tripoli. It was planned to consist of nearly 3008 pre-fabricated flats constructed by industrialised methods by a Danish-Italian contracting consortium. The scheme dominates a large area, 150 hectares to the south of the Tripoli-Tunisia highway on the western side of the capital's centre.

9.3.3.1 Site plan

Hay 2 March site plan was divided into four local environmental areas. Each area, as the designer suggested, should have an elementary school, a nursery and some local facilities. The four areas of housing are grouped around a district centre which should contain shops, a mosque, bank, clinic and other facilities. The work was completed in 2001 with only a few facilities, such as an elementary school, mosque, and shops. Other facilities' buildings, such as a police station and official offices, were started in 2002 (see Figure: 9.4). Huge public areas were left empty between many housing blocks without any landscaping and they became a source of dust, areas where teenagers would gather, making many problems, such as noise, fights and obstructing the way of women to get outside their flats. A part of these areas were subject to many alterations, such as plant gardens, fences and garages (see Figure: 9.6). The planner, however, failed to offer good external areas suitable for social interaction and climatic conditions. The site plan suffers from having few specific children's play areas and places for elderly people. The mix of land uses, which is very important to increase social interaction and make spaces safe as discussed in Chapter Seven, is also absent from the site.

Figure: 9. 4 *Hay 2 March* site plan. (Source: documents of the Ministry of Housing, 1985).

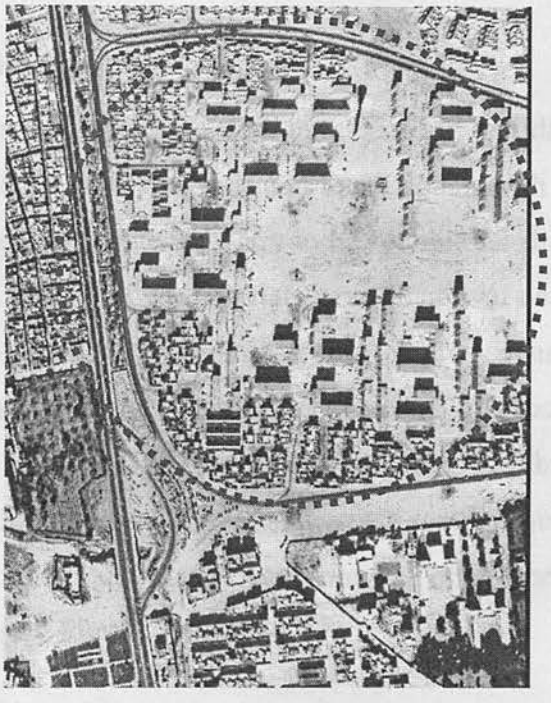


Figure: 9. 5 *Hay 2 March* a part of an arial site plan. (Source: documents of Authority of Survey, 1988).

9.3.3.2 Road network

Hay 2 March is surrounded by four main roads. From the north there is the Tripoli-Tunisia highway, from the south side, the second ring road, from the eastern side, there is a two-way road which connects the site with the second ring road and the Tripoli-Tunisia highway and from the west side, there is the main road that is connected to the

south-west side of the Tripoli master plan by *Gargaresh* street. These roads make the site a separate island, furthermore, they make it more dangerous, particularly for children and elderly people and they carry noise and pollution, as was clear mentioned by the respondents (see Chapter Eight).

The inner streets were unclear and left without pavements, street lighting and without clear path definition. This situation made more difficulties for the inhabitants, such as danger, dust pollution, easily damaged cars, and collected rain water, particularly in winter time and rubbish. The main roads became a place for most commercial activities, such as fast food shops, coffee shops, and meat shops but it is very dangerous for people to cross these roads where many cars are parked on the edges of the road and it is difficult to get to the shops easily.

9.3.3.3 Residential buildings

Hay 2 March consists of mass-produced industrialised buildings of different pre-fabricated prototype blocks that have four and three floors, with three or two bedroom flats in each storey. These two flat sizes vary to be suitable for different family sizes, as the designer suggested. The two-bedroom flats have an area of nearly 106 metres square and the three-bedroom flats have an area nearly 124 metres square. Each block has two entrances on the ground floor and one staircase leads to all floors. Each flat has one guest room, bathroom and WC, two or three bedrooms, one hall (living room), one small dark store, a small kitchen with an area nearly 8 metres square and two balconies, one connected to the kitchen and master bedroom, the other one connected to the hall and the other bedroom (see Figure: 7.26).

From the field observations, photographs and the interviewees' responses as presented in Chapter Eight, many flats have been exposed to design changes which indicate that the flat design has a defect that has led to the residents' dissatisfaction. Users' changes are less than in case study 1, *Hay Alakwakh* because of the construction system (pre-fabricated), which does not allow more changes to occur. The main changes are closing the balconies for more privacy, adding an external wall for gardens, which happens on the ground floor only, and adding more space to the living room or kitchen by combining balconies. The construction system has less flexibility in the design, and flexibility is very important, particularly for

future extension, which was also noted in case study 3, *Kelat Jumma* (*Enjela*). The organisation of the internal spaces failed to reflect the socio-cultural seclusion required between men and women, as well as between guests and family members, as shown in the results of the space syntax method (see Chapter Seven).

Some of the alterations were done for aesthetical purposes, to reflect the occupiers personality and to offer psychological comfort. (Aesthetic needs are among Maslow's growth needs, see Chapter Five). Inhabitants make different aesthetic alterations in their flats to fulfil these needs, for example, by having different building materials used to close balconies, using new paint inside and outside their flats, adding new rooms on the roof and having a garden. These examples demonstrate the extent to which the tenement flats have failed to respond to residents' needs.

Generally, the design of the flats and the layout of blocks has had a negative influence on residents' way of life, social interaction, social patterns, all of which has helped to change familial structures from the extended family to the nuclear family.

Figure: 9. 6 *Hay 2 March* external housing spaces. (Source: the author).

9.3.4 Case study 3, *Kelat Jumma (Enjela)*

Kelat Jumma (Enjela) is a new village located 20 kilometres west of Tripoli city and 4 kilometres south of *Janzur* city and nearly 10 kilometres from the seashore. It was one of three other housing projects constructed in Tripoli by the Korean company, Daewoo. The project was built on nearly 140 hectares of agricultural land and consists of 3500 flats with a density of 23 flats per hectare. This density is classified as low density (see Chapter Four) which has a negative influence on decreasing agricultural land and this is seen to be against resource conservation, as was illustrated in Chapter Seven. The designer adopted the concept of neighbourhood theory as a guide to designing the layout as many other new housing cities which had adopted the same concept, had had a vast influence on housing development in several countries.

9.3.4.1 Site plan

The site plan was divided into four small housing neighbourhoods, with a central area as public building facilities for the four neighbourhoods. Each neighbourhood consists of between 700 to 980 flats, with a local central area for public facilities, such as a primary school, market and nursery; most of these facilities have not been constructed yet. The designers adopted different types of flats within the blocks, which vary in flat size and block height. They aim to have balanced a built-environment that fits different family sizes. The site plan had lots of public open spaces to be used as green areas. The surrounding areas were characterised as agricultural land and they segregated the project from the urban areas. This situation made a clear contrast between the project and the surrounding environment. However, the design of the site plan fails to respond to the surrounding natural environment by using concrete and geometric forms, as well as by having the same block shape distributed throughout the site, with different orientation and structures having been imposed upon the site instead of being a part of it, which goes against the aims of environmental sustainability, as was discussed in Chapter Six. Preserving and integrating with nature can be achieved by using analogies in the form, concept, design and element distribution.

Having the project segregated from the other urban fabric, 20 kilometres away from west Tripoli city, had negative impacts, social, economic, safety and environmental, as was explained earlier (see Chapters Six and Seven). The project suffers from the lack of

a constant water supply, as shown from field observation and interviewees' responses, which has forced residents to make some alterations to the water supply network, by adding small storage tanks for water. Water is basic human need, required for survival, hygiene for good health and comfort, as illustrated in Chapter Five. Other infrastructures, such as a sewage network was also lacking in this project, which could have a negative impact on residents' health. The *Kelat Jumma* (*Enjela*) project, just as the other two case studies, also suffers from having few places for elderly people and specific facilities for children's play areas.

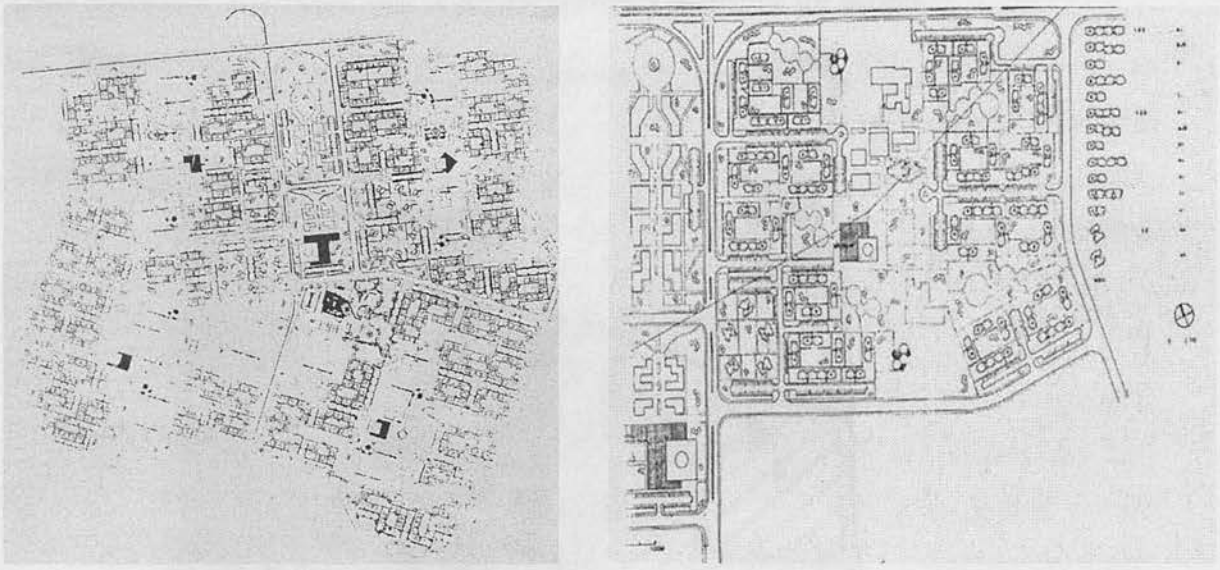


Figure: 9. 7 *Kelat Jumma* (*Enjela*) site plan. (Source: the national council of landed investing documents).

9.3.4.2 Roads

The site plan was surrounded by a network of agricultural roads, such as the road that connected *Janzur* with *Al-Sawani* from the west side of the project and the road that connected east *Janzur* with *Al-Sawani* and *Al- Aziziyah* from the east side. These two roads are considered to be the main roads for many other users, who share road use with the residents of the project. This situation creates traffic jams, particularly in the rush-hours. On the north side of the project there is a two-way road which serves as a main road for the project where there are a few facilities, such as a petrol station and number of shops (see Figure 9.8). This road excludes the project from the industrial area and designed sewage treatment unit that is located on the north east of the project. The

interior streets were designed as cul-de-sacs, forcing parking areas to be created in front of the blocks and connected to the main two-way street which divides the project into two areas, eastern and western. These streets are designed according to planning and building legislation, which is characterised by having a huge width (see Figure: 7.20). The streets have had a negative influence on the environment, cars and housing blocks, due to the wide paved asphalt streets which have more ability for heat gain and solar radiation and reflect this radiation on to the nearest housing blocks. The absence of shaded areas in these streets and cul-de-sacs, particularly for car parking make them difficult to use. And having long direct streets encourages high speed which creates more pollution, more noise and more danger from accidents for people.

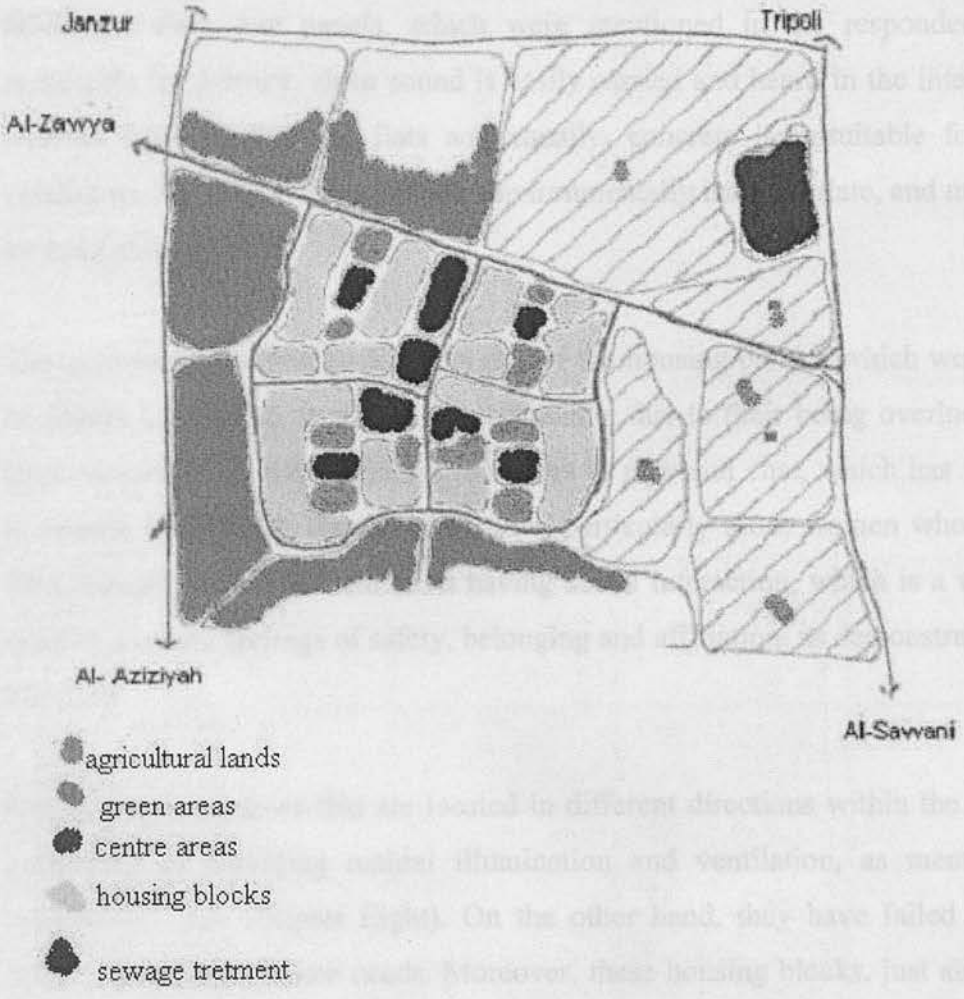


Figure: 9. 8 *Kelat Jumma* (*Enjela*) roads network. Notice how the roads isolate the different communities. (Source: Abulgassem, 1996:72 modified by the author).

9.3.4.3 Residential buildings

The residential buildings distributed on the site are in the form of two different height blocks, 7-floors for single-bedroom flats and 4 floors for 2- and 3-bedrooms flats. The 7-floor blocks were located around the centre area while the 4-floor blocks are on the edges. A pre-fabricated construction system was adopted for this project. The skyline of the village takes a pyramidal shape. There is a variety of flat areas to be suitable for different family sizes. Fifty per cent of the total number of flats are 120 metres square, 20% are 70 metres square and 30% of the flats are 140 metres square.

Concrete is the main building material used in the housing blocks in the shape of pre-fabricated slabs and panels, which were mentioned in the respondents survey as unsuitable for privacy, since sound is easily carried and heard in the internal spaces as well as from neighbours' flats and equally, concrete is unsuitable for the climate conditions. Generally, this system is environmentally inappropriate, and more expensive to build and maintain.

The external places and back courtyards of the housing blocks, which were designed to be places for women to gather are unsuitable, due to their being overlooked and they have become favourite places for teenagers to play and chat, which has forced women to remain inside their flats most of time, particularly those women who do not work. This situation prevents them from having social interaction, which is a very important need to increase feelings of safety, belonging and affiliation, as demonstrated in Chapter Five.

Having large windows that are located in different directions within the flats has been successful in providing natural illumination and ventilation, as mentioned by the respondents (see Chapter Eight). On the other hand, they have failed to respond to privacy and local climate needs. Moreover, these housing blocks, just as the other two case studies, suffer from having any disability services, which should be considered in future legislation.

It was noted in the three case studies that the internal spaces of the flats lack space for drying clothes, so that inhabitants are forced to use the balconies for this purpose, which

are overlooked by neighbours and passers-by. However, these also have become difficult spaces for some of them who have closed off these balconies.

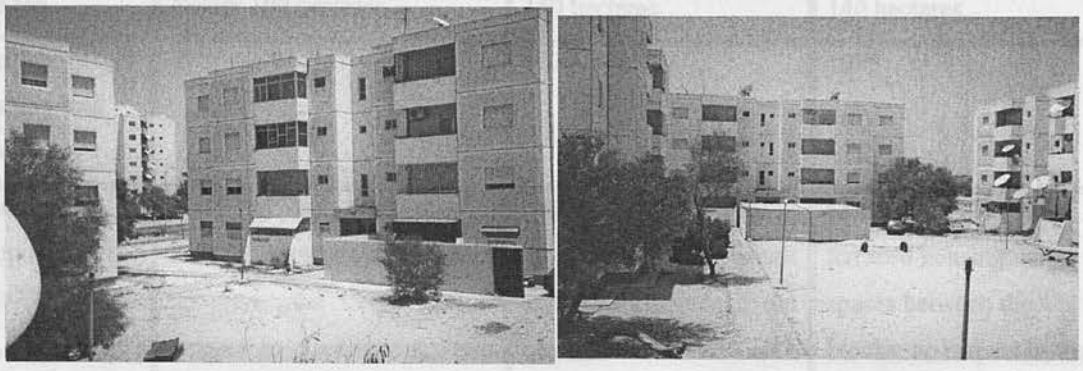


Figure: 9. 9 Deserted external spaces between housing blocks in *Kelat Jumma* (*Enjela*) project. (Source: the author).

Factor	Neighbourhood one	Neighbourhood two	Neighbourhood three	Neighbourhood four	Total
Total area in hectares	27.77	36.58	40.15	32.91	137.41
Housing area in hectares	15.29	19.10	19.50	19.10	72.99
No of residents	4300	5500	5500	5600	20900
No of flats	720	950	850	980	3500
Total density	26.0	26.0	21.2	29.78	25.47
Housing density	47.0	50.0	43.6	51.30	47.96

Table: 9. 1 Information about public housing in Kelat *Jumma* (*Enjela*) project. (Source: Abulgassem, 1996:80)

	Case study 1 *Hay Alakwakh*	Case study 2 *Hay 2 March*	Case study 3 (*Enjela*)
Location	Nearly 8 km south of Tripoli City Centre.	6 km west of City Centre	20 km west of Tripoli city
Total area	Nearly 100 hectares	150 hectares	140 hectares
Date of occupation and completion	1981 - 1985	1979 -1983	1985
Typical design characteristic	Some of the flats are in terraced housing; large spaces between the blocks; no respect to orientation; two staircases in each block; four balconies in each flat; two lifts in each block.	All the flats are in terraced housing; small spaces between the blocks. No respect to orientation; one staircase in each block; two balconies in each flat; no lifts.	Some of the flats in terraced housing; large spaces between the blocks; no respect to the orientation; one staircase in each block; two balconies in each flat; two lifts in each block.
The construction system	Reinforced concrete frame	3000 flats use industrialised methods.	Industrialised methods
The Contractor	Romanian company	Danish-Italian company Industrialised methods	Korean company Daewoo Industrialised methods
No of floors	4 ,8 ,12	2 ,4	4 ,7
No of flats	1996	5000	3500
No of bedrooms	2 -3	2 -3	1 -3

Table: 9. 2 The main characteristics of the three case studies. (Source: the author).

9.4 Conclusion

This chapter presented the research findings and examined three public housing case studies in Tripoli with the aim of demonstrating the practical application of the research judgment. The thesis findings present as a framework, which is distilled from the chapters in Parts One, Two and Three of the thesis, as a body of knowledge. The legislation framework is classified into four subsections; contextual considerations, dimensions, implementation and control and sustainability. The contextual considerations inform decision makers (legislators) of the most important aspects that should be considered related to Libyan society, such as culture, climate, religion and way of life. The dimensions consist of physical objects and the non-physical subjective areas in order to improve the quality of the external and internal housing spaces. While the implementation and control and sustainability subsections present some suggestions that can help the right implementation of the framework as well as activate it and suggest mechanisms to control and sustain the housing law framework. This body of knowledge might help to outline the development of Libyan future planning and building legislation.

The chapter results show that the external and internal spaces within public housing in the three case studies have failed to satisfy the inhabitants' needs and have generated more problems for them. Almost the same problems are shared between the three case studies that as a result of inappropriate and out-of-date planning and building legislation. This can be seen as a strong indicator for the significance of the research framework finding and to call for the findings to be embedded in any future developed planning and building legislation. The following part will present the conclusion of the thesis. It reviews the results of all the parts of the thesis, followed by further research and final message.

Part Four, Conclusion

Chapter Ten

The Thesis Conclusion

Chapter Ten
The Research Conclusions

10.1 Review: establishing the problem

Libya, among many other developing countries has witnessed rapid changes which have occurred at a variety of levels such as in its social, economical and housing developments. The population of Libya has doubled in the last 30 years as a result of a high birth rate and good health services. Migration from rural areas and emigration from neighbouring countries have led to a remarkable expansion and physical growth of the major cities. The response of the authority to this has been to adopt policies and urban developments to rapidly meet the lack of housing, infrastructure, and social facilities. As a result, many housing projects built according to different design patterns have appeared in Libyan cities. These projects, however, were built according to legislation produced during the Sixties which subsequently has proved to be unsuitable for the needs of families as it has led to dramatic changes to many of their social systems and traditions. One outcome of this situation is that residents have been forced to give up or modify many of these traditions and ways of living.

The motivation for this research, (as explained earlier) emerged from observing the consequence of modern public housing in Libya and its failure to embrace the cultural values and people's needs and to modify the specific housing design to accommodate a range of needs.

The author has identified that the developers have been following a set of legislations which are not based on housing design in the traditional, Libyan city, which has been characterised by courtyard houses abutting one another, through which Libyan society's

social cohesion was grounded. Instead, modern legislation requires housing units to stand separate from one another across a specified minimum distance. This calls for a new type of neighbourhood layout, which in turn demands changes in the lifestyles of those who live there.

The main purpose of the study was to build a body of knowledge which would lead to the reform of Libyan housing legislation. New legislation is needed to deal with the everyday needs of people in a social and climatic sense as well as for the future development and transformation of the society. This task was done by formulating a framework, which came from integrating the results of the parts One, Two and Three of the study. This framework is intended to help the legislators in the future to develop comprehensive housing legislation. The outcome of the research it is hoped, might help designers, planners, and authorities to be more aware of the needs and the criteria for a more suitable housing legislation.

10.2 Review of the thesis

The thesis is structured into four parts. **Part One** is introductory and consists of two chapters, Chapter One (introduction) and Chapter Two, which reviews the background of Libya, its history, geographical, climatic and cultural aspects. The review clarifies how housing (external and internal spaces) has been affected by these aspects. In addition, it explored the typical Libyan traditional courtyard house and modern public high-rise flat in more detail, to understand the factors which formulate their spatial configuration, in order to explain the change and developments that occur in these spaces.

The review has shown that geography and climate play an important role along with other dimensions, such as political and cultural to formulate the architectural style, building techniques and the way external and internal spaces are connected to each other. The major influence on the culture and civilisation of Libyan society until the beginning of the twentieth century was Islamic, especially on its architectural style, and particularly in the organisation of its external and internal spaces and its technical

construction, which has given the Libyan traditional cities their identity and preserved the socio-cultural values of the people.

Part Two reviews the deductive theoretical framework (learning from theories) of the study. It covers important areas which need to be addressed in Libyan planning and building legislation. These areas are distilled from two sections of this part, Section A, general theories and Section B, specific theories (see 9.2 The Research Findings). In Section A, (Chapter Three) a general concept of housing, in terms of dwelling and neighbourhood from a theoretical perspective, is reviewed. Additionally, it views the dwelling as a human phenomenon, which has a composite character. This conceptual framework, which provides the study topic with its general background, is presented as a literature review. This literature overview helps the researcher to understand and discover the factors influencing housing, in order to examine and develop planning and building legislation in Libya. It reviews and illustrates the human need for the dwelling, interprets connotations of the dwelling as revealed in the Arabic and English languages, looks at socio-cultural and gender perspectives of the dwelling, and discusses the concept of neighbourhood, and its impact on human behaviour in housing. The concept of neighbourhood was studied and presented from two different perspectives, Islamic and western. The two perspectives reveal that they are contrary to each other. The review shows that current Libyan legislation has been influenced by the western concept of neighbourhood size.

Section A, (Chapter Four) explores the function and concept of planning and building legislation and its impact upon housing design. It reviews its development generally in different countries, to provide a closer and more detailed background discussion in the context of Libyan planning and building legislation. It then concentrates on the influence of specific codes and their impact on current legislation on public housing in Tripoli. Generally, the aims of legislation are to safeguard health, safety, social welfare and security in society through well-planned and designed housing in cities. To achieve these aims in Libyan planning and building legislation, the chapter evaluates and studies in detail the legislation from different approaches.

Islamic law in Tripoli Old City has given the city its identity and preserved the socio-cultural values of the people and is a good foundation on which future Libyan

legislation should build. Moreover, the control system and participation of local people in managing their environment within local streets are other examples of Islamic law that could be adopted.

This chapter has illustrated that any future legislation should emerge from the society's needs. The current legislative comparison between Libya and the UK clarifies the similarities and differences between them. Many codes in current Libyan legislation have been adopted from western countries.

Through reviewing and analysing Libyan planning and building legislation, some defective issues appeared as well as many important issues which have not been addressed by it. These issues include: giving little consideration to climate, where no specific codes have addressed the types of building materials that would deal best with local climate, as well as the size of windows and its orientation and the dwelling itself; future extensions, the number of spaces within a dwelling and the conflict with socio-cultural norms, such as privacy that comes from the application of setbacks, site coverage limits, balconies and the absence of a hierarchical order in the streets' network (private, semi-private, semi-public and public). Additionally, there is an absence of specific codes that deal with location and which would let new housing projects be more connected with the city and less segregated from it.

The review shows that there is a need to redevelop and bridge some gaps in current Libyan legislation, particularly with regard to:

1) Reconsidering traditional planning principles, such as mixed use that would encourage people to live together and have equal access to services and facilities and revising urban planning by modifying the codes that might help to achieve these principles.
2) Classifying residential areas by land-use codes into different densities, such as R1-R7 would help to integrate different income groups and not have them residing within the one place which creates disharmonious neighbourhoods. These need to be redeveloped.
3) Providing codes that would help to design suitable spaces in housing (number and size) to accommodate Libyan families.

4) Reconsidering the natural environment, economy and socio-culture to achieve sustainable development within housing.

Section B consists of three chapters. The first chapter (Chapter Five) deals with human motivation models. This chapter introduces and compares four models that have addressed human needs from different perspectives to gain a good understanding of these needs. These needs have a huge influence on, control and direct human behaviour. The life of an individual and family unfolds in the space within the home and neighbouring areas. Human needs should be related to the space within housing. To formulate good spaces, the satisfaction of human needs should be recognised. Therefore, attempting to satisfy these needs in planning and building legislation is necessary.

These theories presented the importance of human needs as motivations behind any behaviour. Moreover, behaviour is both directed to, and results from, unsatisfied needs. Human needs are an important part of human nature. Values, beliefs, and customs differ from country to country and group to group. This study suggests that to formulate good spaces, human needs should be recognised and considered and their socio-cultural and religious requirements.

The chapter then illustrates and suggests how human needs could be satisfied through planning and building legislation. The study proposes that planning and building legislation which embodies all human needs will help to create an inhabitable environment.

The second chapter (Chapter Six), discussed and provided an overview of sustainable development as an important approach which deals with the natural environment generally, and the built environment in particular, to improve people's quality of life. The chapter addressed the theory of sustainable development and related its concept to planning and building legislation where a good contribution could be made.

The chapter described and assessed three dimensions of sustainable development in housing and outlined some definitions of its purposes and its significance:

environmental, economic and socio-cultural sustainability. Ecological sustainability aims to protect resources, where preservation of the environment is deemed essential for its protection as a valuable heritage to the extent that it can meet the housing needs of future generations. Economic sustainability requires dealing with long-term resource productivity and low-use costs and cultural preservation in the form of built heritage conservation. Social sustainability in housing requires that the structure is adaptable. Houses that cannot allow for changes will become alienating.

The chapter then presented some guideline for sustainable development applicable to housing in Libya, to improve the quality of life in contemporary housing and to fill the gap in planning and building legislation.

The third chapter (Chapter Seven) explored and examined the theory of Space Syntax. Moreover, it demonstrated the theory as a tool to understand how societies constructed their spaces within buildings or urban layouts, and considered to what extent their settlements suited their innate priorities and customs.

The review explored as well as identified five aspects that can be expected to benefit the outlining of building legislation in Libya. These are: social interaction, social behaviour, the mix of land uses, integration and segregation and safety. Integration is the core concept of space syntax in any spatial analysis. Furthermore, integration values are directly related to the other four aspects. High integration plays an important role in increasing social interaction, social behaviour, the mix of land uses and safety in external spaces. On the other hand, segregation decreases them, particularly in modern Libyan housing.

The chapter then examined and evaluated its applications in external spaces in Tripoli City centre, Tripoli Old City and *Hay Al-akwakh* neighbourhood (case study 1) and internal spaces in a local level traditional courtyard house and modern flats. It was necessary to look at the three external areas to analyse their spatial properties using a comparative study, since differences in planning patterns have emerged from the adaptation of different planning and building legislation between Tripoli's Old City and its New City. Moreover, to explore if the idea of neighbourhood which has been adopted for public housing and enhanced by planning and building legislation in

Tripoli, has achieved good external spaces that are suitable for the way of life of Libyan families. The results show that the spatial configuration of the Old City is more suited to Libyan families' way of life than that in the New City. The hierarchy of external spaces and street width in Tripoli Old City is a good resource for developing legislation. Moreover, the idea of neighbourhood which has been adopted for *Hay Al-akwakh* neighbourhood (case study 1) and enhanced by planning and building legislation in Tripoli, has failed to achieve good external spaces that are suitable for the way of life of Libyan families.

At the internal level, it can be concluded from spatial analysis of the courtyard house it is well organised to fulfil the customs of Libyan society. The space syntax analysis showed that there is a logical hierarchy in the spaces reflecting the socio-cultural seclusion between men and women. On the other hand, in the modern flat, the findings show that there is no logical hierarchy in the organisation of the internal spaces, where the family bathroom was located in the guests' area and the balconies and the segregated spaces have a mixed use between family members and guests, which in Libyan custom is not allowed.

Planning and building legislation in Libya could benefit from the results of the analysis of external and internal spaces by showing the designers and planners how to create spaces more suited to the Libyan people's way of life and customs.

Part Three consists of two chapters and presents the empirical work (**inductive)** which aimed to gain knowledge from observation, a practical questionnaire and interviews. The first chapter (Chapter Eight) dealt with an open-ended survey. A qualitative questionnaire was distributed randomly among the households of the three case studies. The questionnaire was put to the respondents and selected key interviewees (architects, planners and decision makers) who deal with real housing problems, to discover if other issues arose which were not addressed in the literature.

The main findings of this chapter in the context of the research questions can be summarized in three parts: at dwelling unit level, at neighbourhood level and the findings from the interviewees. The following summarises these findings.

First it should be noted that the size of the families in the public housing survey was between 5 to 10 persons, which can be characterised as large or extended families requiring more space in the flats to accommodate all the family members and gratify most of their needs.

Dwelling unit level

The results show that the flats of respondents are the only choice that was given to them and they respond only to satisfying their most contingent needs. Additionally, the proximity to the workplace is the highest reason that motivated the respondents to choose their flats. This shows how proximity to the workplace is important to people as it involves less travel by car to the workplace, less time is needed for this and less pollution is caused. Pollution then, has direct and indirect effects on public health and the economy.

Lack of indoor spaces to accommodate family members is the main reason which motivated people to move from their flats, because, having many people living in a small place causes overcrowding and a lack of privacy. Furthermore, higher internal density (crowding) is perceived as the factor which forces children out of their flats to play where parental surveillance and control over children declines, leading to juvenile delinquency. The spaces and the total floor area of the sample of public housing in Tripoli are not satisfying the inhabitants' needs and this is generating more problems for them. Planning and building legislation codes, such as setback requirements, site coverage, building height and density play an important role in limiting the number of spaces and floor area.

Interviewees pointed out several negative aspects in their flats, accompanied by different reasons. Most of these aspects are reflected in applying planning and building legislation to such features as balconies, windows which overlook neighbours, thin walls and the organisation of internal spaces that are unsuitable for local customs. These lead people to make changes to their homes because they are dissatisfied with the spaces that no longer fulfil their needs and which do not reflect their social and cultural life.

Closing off balconies are the most frequent changes made to the flats for many reasons, such as for the sake of raising the level of privacy for inhabitants' convenience or to increase the area of the spaces that were closed to them, like the living room or kitchen or guest room. On the other hand, flexibility in the design of Tripoli public housing is not given sufficient care by designers; therefore users' changes are limited by the structural system (prefabricated) and the design of spaces. The flats have failed to meet the expectations of the inhabitants and they respond to only some of the family's requirements. A public dwelling should offer flexibility and respond to family needs. Planning and building legislation as a tool should be helping them to satisfy their needs in housing rather than being an obstacle to having their needs met.

The interviewees miss many things from their flats that could be classified as: improving the function of the existing internal spaces, adding new spaces and improving the quality of the internal and external spaces, such as landscaping around the apartment blocks or a garden, internal decoration and having new furniture and equipment. It is clear that most of these concerns are keenly felt and shared by respondents and they demonstrate and reflect the significance of these matters to the residents and how the design of Tripoli public housing has failed to meet the real needs of people. The lack of children's play areas, privacy and special needs for elderly people are examples of that. Planning and building legislation in Libya can contribute to improving the design of housing by addressing these issues.

Libyan planning and building legislation has concentrated on hygiene needs from only a physical perspective by providing healthy spaces for users, as do other western buildings and housing legislations but neglected other needs which are more subjective that have had an indirect influence on hygiene needs as a result of overcrowding and a lack of enough rooms to accommodate all family members. Most of the flats' spaces are evaluated as 'bad' since some of them lack, in the original design, such spaces as a store room, garage and space for drying clothes.

The structure and layout of Tripoli public housing determines how well temperature and sound are transmitted from outside or from adjoining properties. In Tripoli public housing, noise and heat from the outside are exacerbated through the use of big windows with a single pane of glass and have prefabricated walls that have less sound

and heat insulation, as in case studies 2 and 3 Tripoli housing. Moreover, Libyan building and planning legislation currently is issued without addressing specifically building materials. That is considered as being a gap in this legislation.

Respondents' main preference was for a detached house (villa). This type has a large lot surrounded by a fence in quiet areas and has enough places and spaces suitable for carrying out Libyan customs and traditions. Moreover, the family can participate in the design of the house. This type (villa) is preferred because it offers the possibility for future extensions, depending on family requirements. Future extension is very important for Libyan families because they still have strong ties to close relatives and to extended families. However, people who live in public housing high-rise blocks miss the potential to make any future extension to their flats that could sustain their way of living.

The courtyard house is the second preference for the respondents. Because this type provides good privacy, it is suitable for local climate conditions, it has good ventilation, and offers a space for relaxation as it has quiet spaces, such as the court with planting, a fountain and high privacy. This type is no longer constructed due to the application of zoning regulations.

Neighbourhood level

Respondents mentioned important issues that they disliked in their neighbourhoods, such as fewer streetlights, mosques that are far from residents and a lack of places for elderly people to meet are other important issues. These issues have a direct negative influence on people's way of life, such as reducing their social interaction, decreasing the daily frequency of times they go to the mosque, which is very important in Islamic teaching as it is a religious requirement, for prayers and it leads to the social exchange of news and to resolving their shared problems. Fewer streetlights can contribute to crime, whereas good streetlights can contribute to people feeling safe in external spaces. These issues are clearly considered in the layout of traditional housing as is evident in Tripoli Old City where the mosques are distributed within walking distance of most residents and there are places for elderly people to chat, meet, discuss, etc. and these are provided on city streets and near mosques. On the other hand, new public housing has

failed to respond to these important needs in their external spaces. Libyan legislation should deal with these key issues in order to achieve sustainable neighbourhoods.

The majority of respondents are dissatisfied with the facilities that are provided in their neighbourhood. The main issue they mentioned is the discontinuity of the water supply, which was clearly observed in case studies 2 and 3 of Tripoli public housing. In *Hay Enjela* case study 3, the municipal water supply runs only 1 to 3 days a week, hence people buy water from trucks that carry water tanks. The second reason for dissatisfaction is the overflow of sewage. This was mainly found in *Hay Enjela* (from field observation) where the sewage pipes are not connected to the main sewage system. To reduce this situation, the inhabitants are forced to put septic tanks near their housing blocks on the ground. Maintenance is another important issue that was mentioned by some respondents. This can contribute to increasing the quality of the housing space as well as promoting a sense of belonging and esteem. Moreover, the majority of respondents are dissatisfied with the children's playing areas in their neighbourhoods. Lack of play areas are the main reason for dissatisfaction in the three Tripoli housing case studies because there is a lack of specific areas in which children can play safely.

Planning and building legislation in Libya should study with more care the significance and availability of public facilities in neighbourhoods because lack of such facilities causes many problems for inhabitants and decreases the standard of the quality of spaces and could be a strong reason why the residents move from their neighbourhoods.

The interviewees suggested many matters that they would like included in any future neighbourhoods, which can be divided broadly into four categories:

1) Matters that are related to basic needs, such as safety (street lights, night safeguards and safe parking areas) and privacy needs (suitable distances between housing blocks). These things are very important for all people as mentioned in Chapter Five and the reasons why have been addressed within many theories. Tripoli public housing has failed to respond to these basic things, such as the case of the high-rise blocks in case study 1 where the twelve-storey blocks

overlook the eight and four-storey blocks and in case study 2, where the distance between housing blocks is very close and that causes a lack of privacy.

2) Matters that are related to socio-cultural needs and which can be fulfilled within different physical spaces at neighbourhood level, such as mosques with multipurpose hall, places for elderly people and open markets as mentioned above. These matters are one of the human needs that lead to having strong social relationships between inhabitants. It is not only the availability of these spaces within neighbourhoods' layouts that can fulfil the socio-cultural needs but also the way these spaces are organised.

3) Matters that are related to economic and climate issues, such as compact buildings, good transportation, paved streets, work places within neighbourhoods and open markets (*suqs*). These matters are important for inhabitants to sustain and stay in their neighbourhoods and a lack of these matters can create many problems as well as can be a strong factor for pushing them to move from their neighbourhoods. The significance of these matters was addressed in Chapter Six (sustainable development).

4) Matters that would improve the aesthetics and hygiene of neighbourhoods, such as good landscape, tranquillity, gardens and children's play areas, general cleanliness and maintenance and a complete infrastructure. These are the main aspects which lead to having a comfortable life and enhance the feeling of belonging to the place as was discussed early in Chapter Five.

The location of housing projects plays an important role in the degree of satisfying users' needs and can have negative or positive effects on them as was mentioned in Chapter Seven (space syntax). Choosing locations far and segregated from the city centre and out of or at the edges of master plans, such as in Tripoli public housing case studies 1 and 3, can deprive residents of public utilities and cause many problems, such as a lack of infrastructure due to its cost, a lack of proximity to the work place and a feeling of isolation from relatives, as was mentioned by the respondents. Planning and building legislation should address the significance of the location to avoid the many problems that can occur from the segregation of neighbourhoods.

Respondents made several suggestions to reduce travelling time to and from the work place. The main suggestion is to have regular public transport, such as buses. Using public transport can play an important role in reducing own car usage which has many positive advantages as well as leads to less travelling time, less negative traffic impacts and increases the opportunity for social interaction between people and creates more amity due to their being more people in one space such as on a bus at a regular time, meeting, chatting, exchanging news and being familiar with each other can achieve good social ties. The second important suggestion is to provide workplaces within neighbourhoods, which would reduce travelling time and keep negative traffic impacts to minimum levels.

Findings from selected key interviewees

The interviewees' results show that there are many opinions shared between the survey respondents and the selected key interviewees. These findings have emphasised that the public housing issues are common and obvious. It can be concluded that public housing in Libya had both positive and negative attributes, but the negative outweigh the positive.

Public housing (positive)

The interviewees demonstrated that public housing projects have contributed greatly to solving the housing problem in Libya for many people as well as developing some areas. The state provided a large number of houses within a short time and concentrated the most on keeping costs down. This has come at the expense of the quality of these houses.

Public housing (negative)

Public housing is unsuitable for the Libyan socio-culture and way of life, since privacy is not fully gratified, the number of spaces are insufficient to accommodate all family members, particularly, the extended family or families that have more than five children. Another difficulty which faces people who live in high-rise flats is having to use staircases because of a lack of lifts or when they are out of use. In these projects, the main aim was to produce quantities rather than quality, consequently some

infrastructure, public utilities and specific spaces for elderly people and children were ignored.

The results show that most Libyan people would prefer to own a private house on the ground floor because its external and internal spaces are suitable for social activities, privacy, norms, family members and the culture of the society. Whereas, public houses in Libyan culture are considered as transitional dwellings until such time as people can afford to have a more suitable house.

The flats in the research study, were built with imported building materials, which are not convenient for the Libyan environment, thus effecting negatively the inhabitants' way of life. Being non-proofed materials against either heat or cold, forces the occupier of the property to resort to the use of air-conditioning, which requires more electricity and leads, of course, to extra costs.

Most of the locations of these projects are outwith the city schemes. They are isolated and because they were built on agricultural land, they have required the infrastructural services of roads, water and all utilities etc. However, they have not been put into place properly and systematically and they are inadequately maintained, resulting in occupier's creating their own ad hoc arrangements to meet their needs, such as installing water tanks or air conditioning units.

Tripoli public housing projects have embodied a mixture of different styles of building design; they therefore have no specific identity of the traditional heritage type and have not taken into consideration the religious, social and cultural values, which are of great and primary importance in the people's lives. These projects suffer from huge public spaces between the housing blocks. These spaces have been neither covered with tiles nor afforested and landscaped with trees, bushes and grass, thus such vacuums have become a source of dust and environmental pollution and as such, have become a source of danger to people's general health.

These projects lack the basic services of schools, educational centres, day centres for the elderly, playgrounds for children, etc that are entirely necessary for people. It was also noted that most of these projects have no places for key social gatherings, which

usually strengthen social interaction as well as encourage a feeling of commitment, in terms of adherence and belonging to a place.

The absence of building management system and regular maintenance within these housing leads, in turn, to the absence of basic services. The upper floors of the buildings are undesirable and cause great annoyance for the inhabitants due to the lack of a sound-proof system and this is considered as one of the occupiers' main problems. The designs of the buildings have not taken into consideration the characteristics of the necessary disability services in terms of car parking, corridors and lift size, which should be obligatorily taken into account, reconsidered and added to the building law.

Most public housing in Libya was designed by foreign consultants' offices which had no considerable knowledge of the local culture of the Libyan society and that has led to creating unsuitable housing patterns, such as prefabricated houses, which are inappropriate, given the local climate and way of life. Furthermore, it lacks appropriate planning for a hot climate, from the point of view of orientation and providing shaded external places. Sometimes the same design and planning of public housing was applied in different regions and at different topographical sites without any regard for specific local conditions and people's needs.

Planning and Building legislation

The interviewees concentrated on the great impact of planning and building legislation on the design and planning of public housing, which in turn, affects the width of the roads, streets and the form of housing in general. Planning and building legislation as it is employed in public housing has had a negative impact on the planning and design of spaces. The negative effects include being unable to fulfil all Libyan families needs due to many of its codes having been imported from other countries. Moreover, these codes have been applied in all Libyan regions, but did not consider the difference in geography, climate and customs, as well as the zoning codes, such as setbacks, plot area, building height and site coverage which are the source of the main socio-cultural and economic problems and the loss of agricultural land. All of these reasons have motivated inhabitants to make alterations that have contravened planning and building legislation.

Consequently, the interviewees were dissatisfied with Libyan planning and building legislation since it needs a major re-evaluation to be suitable for all Libyan regions and it has many gaps which have caused real problems for people, such as pollution, a lack of privacy, and socio-cultural and economic factors. Thus the interviewees have raised and proposed some points regarding Libyan planning and building legislation, which could be used to revise it and therefore, improve the design quality of housing spaces, these are:

a. Planning and building legislation should be developed and revised regularly;
b. The legislation should be based on the culture of people and their understanding and needs;
c. The legislation should help the designer and the planner to understand people's requirements in order to achieve success.
d. The legislation should consider the particular circumstances of every Libyan region when addressing planning and building legislation, from geographical, climatic and socio-cultural perspectives;
e. The opportunity should be given to users to participate in the design and planning processes of both external and internal spaces; and
f. Local building materials should be used and developed which are suitable for every region.

Alterations

The changes that were made by inhabitants in their flats and what the motivators were behind these actions, is the fact that most public housing is designed and constructed by foreign companies and consultant offices and they are not sufficiently knowledgeable about local culture and people's needs. As a result, different public housing patterns have emerged which are unsuitable for Libyan families from the point of view of spaciousness, privacy, security, climate and safety. These have led to enforcing inhabitants to make many alterations to the external and internal spaces of their dwellings, for example, closing off balconies to increase privacy and prevent dust and rain entering into the internal spaces or adding more area to specific spaces, such as the living room, kitchen or bedrooms. These alterations can be seen as having spoiled the external elevations, they present an ugly view and people see them as the failure of architects.

Most of the alterations were done without any advice from an architect or civil engineer and most of the alterations contravened the law. A number of these alterations created construction problems, such as making cracks as a result of adding more load to the building by adding a new floor on the roof. Any alterations should have been done after getting advice from an architect or civil engineer.

It can be concluded that the imposition of current planning and building legislation and city master plans has caused a discontinuity between the Libyan housing traditions and modern housing projects.

The second chapter (Chapter Nine) presented the research findings and examined three public housing case studies in Tripoli with the aim of demonstrating the practical application of the research judgment. The thesis findings were presented in this chapter as a framework, which is distilled from the chapters in Parts One, Two and Three of the thesis, as a body of knowledge. The legislation framework is classified into four subsections; contextual considerations, dimensions, implementation and control and sustainability. The contextual considerations inform decision makers (legislators) of the most important aspects that should be considered related to Libyan society, such as culture, climate, religion and way of life. The dimensions consist of physical objects and the non-physical subjective areas in order to improve the quality of the external and internal housing spaces. While the implementation and control and sustainability subsections present some suggestions that can help to have the right implementation of the framework and suggests mechanisms to control and sustain the housing law framework.

The results in Chapter Nine show that the external and internal spaces within public housing in the three case studies have failed to satisfy the inhabitants' needs and have generated more problems for them. Almost all the same problems are shared among the three case studies, that is as a result of inappropriate and out-of-date planning and building legislation. The failure of the Tripoli public housing to satisfy people's perceived needs, in spite of the generous facilities, innovations and many new physical qualities that they offer, was considered by the study as an important finding. It shows that it is not only important what is built, but how people perceive it. The study

therefore shows that there is a misalignment between people's perceived needs and the physical structures they inhabit. This can be seen as a strong indicator for the significance of the research framework finding and for the need to call for the findings to be embedded in any future developed planning and building legislation.

Finally, **Part Four** consists of one chapter (Chapter Ten) which describes and establishes the research problem, a review of the thesis, general recommendations, further research areas are suggested to support the research findings framework and the final message is given. The outcome of the research is expected to help designers, planners and authorities to be more aware of human needs and the criteria for suitable housing legislation.

10.3 General strategy and recommendations

This section presents and suggests a general strategy for future Libyan housing legislation and general recommendations to certain problems observed previously, which the author sees as important and mainly related to the role of the Libyan government in housing legislation. This strategy and recommendations might help to produce suitable external and internal housing spaces.

First: the general strategy

- Housing legislation should consider maintaining people's way of living and avoid dramatic changes. The authority has been driven to adopt accelerated policies and urban developments
- Housing legislation should recognise social and cultural transformation, a need for modernisation can be sourced from within Libya's cultural heritage.
- Housing legislation should benefit from an understanding of the Libyan housing tradition from the existing heritage. Housing legislation should foster continuity between the traditional culture and future projects.
- Legislation should be comprehensive in nature. Housing legislation should understand and deal with the real problems both at the dwelling and neighbourhood layout levels.
- Housing legislation should be flexible to allow features missing in the future to be integrated into revised legislation.

- The design of housing should include participation by local designers, local builders and users who understand the real nature of people's needs instead of foreign consultants' offices.
- Housing legislation should allow for different housing typologies within streets and neighbourhoods.

Second: general recommendations

- There is a lack of co-ordination between the many different bodies that provide the services, i.e. electricity, water, schools…etc. within housing projects. The government should create a mechanism that would help to improve co-ordination between the above-mentioned bodies towards achieving proper economic planning and design.
- The Libyan authority should be relaxed about changes that occur in external and internal housing spaces that happen as result of a failure of the legislation.
- The Libyan authority should be more in tune with traditional values. The housing legislation should help the designer and the planner to understand people's requirements in order to achieve success. The legislation should come as a result of co-operation between both the designer and the people.
- Most public housing in Libya was designed by foreign consultants' offices which have led unsuitable housing patterns, such as prefabricated houses which do not consider the local climate and way of life. In these projects, the main aim was to produce quantity rather than quality where infrastructure, public utilities and specific spaces for elderly people and children were ignored. More emphasis should be given to improve the quality of housing spaces.
- The planning and building legislation should be reviewed and developed regularly.
- There is a lack of appropriate planning and design of housing spaces for the hot climate in terms of orientation, offering shaded external places and acknowledging the socio-culture of the local people. Sometimes the same design and planning of public housing was applied in different regions and in different topographical sites. This could be achieved by giving users the opportunity to participate in the design and planning process of external and internal spaces, as well as to involve local designers and local builders.

- To consider the circumstances of every Libyan region when addressing planning and building legislation, which include geographical, climatic and socio-cultural issues and to use and develop local building materials which are suitable for every region.

10.4 Further research

The author does not claim that this study can solve all housing legislation problems. He takes only a first step in outlining future Libyan housing legislation, since Libyan housing legislation has not been studied and investigated in-depth before. The suggested legislative framework needs further research across many different areas. The following are examples of these areas.

First, the contextual considerations, which consist of the most important aspects that should be considered related to Libyan society for future housing legislation, could be explored and illustrated in a more detailed way and can be a valuable subject for further research. These contextual considerations are related to culture, climate, religion and way of life. They have deep undercurrents and have core, long-term values, which need to be properly understood prior to making full use of them in the development of Libyan housing legislation.

Second, the mechanism or system which is proposed should implement the legislation framework can be developed further. In this matter, it is very important to involve local people to play an important part in the implementation of the housing legislation to their own housing spaces so that they can avoid any contraventions of planning and building legislation. The current Libyan planning and building legislation prevents local people taking responsibility for creating their built environment.

Finally, the control and sustain system of the housing law framework can be another subject of further research. Many governmental and local official bodies could take a major role in sustaining the proposal framework as well as educational institutions and the media.

10.5 Final message

The design of housing is one of the most difficult tasks in the field of architecture. Housing meets people's functional, social and spiritual needs. Thus, housing is very important, it has to be looked after and the authority should pay great attention to its social and legislative context. The study explored public housing in Tripoli, why it is symptomatic of unsuitable building and planning legislation, has failed to respond to local people's needs and it does not generate suitable housing for the Libyan family. Whereas, housing legislation should play a major role in formulating external and internal housing spaces.

This thesis emerged from the necessity of developing an approach to housing legislation to meet the aims and objectives of the study. The research has identified important aspects related to physical objects and the non-physical subjective areas in order to improve the quality of the external and internal housing spaces. These aspects are the main components of the suggestion framework as a result of the research findings which are considered as being the core contribution of this study. These areas are classified under Maslow's model, and it is an attempt to locate housing legislation within this important model, expand it and it can then be seen as another contribution. This outcome is expected to help designers, planners and authorities (decision makers) to be more aware of human needs and the criteria for suitable housing legislation in Libya.

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Appendices

Appendix One: the English copy of the Questionnaire

Appendix Two: the Arabic copy of the Questionnaire

Appendices

Appendix One: the English copy of the Questionnaire

Appendix Two: the Arabic copy of the Questionnaire

Appendix One: the English copy of the Questionnaire

Comprehensive Approach to housing Legislation
With reference to housing in Libya

(Tripoli – Libya)

2002

A: Personal background **Code No:.....**

Name (no obligation).....Interviewer:.....
Age:.....sex:.....Date of interview:.....
Occupation:.....Time start:.....Time end.....
Educational status.....
Place of birth:..... .Place of interview:.....
Original residence place..... ....
Address:.....
.....

1- How many years have you lived in Tripoli city?.....
2- How many people live with you in your house? .....
3- What are the ages of your children?
.....
4- How did you come to own your flat?
.....
5- How long have you been in your house?
.....

B: Information about the dwelling unit

6- Mention (3) reasons that motivated you to choose your current house.
1).....
2).....
3).....
7- Do you consider moving from your house? Mention (3) reasons why.
Yes/no.....
1).....
2).....
3).....

8- Did you make any changes in your flat? Mention (3) changes. Give (2) reasons for each change.

Change 1).....Reason a).....
b).....
Change 2)..... Reason a).....
b).....
Change 3)..... Reason a).....
b).....

9- Mention (3) changes you would like to make in your flat but which you can not. Give (2) reasons for that.

1).....reason a).....
b).....
2)..... reason a).....
b).....
3)..... reason a).....
b).....

10- Mention (3) important things you miss in your flat and give one reason for each.

a)..... 1).....
b)..... 1).....
c)..... 1).....

11- Is the spaces in your flat suitable for your family Yes/no? Mention 3 reasons for that.

1).....
2).....
3).....

12- If you had the chance to participate in designing your house what kind of things would you want to be in it? Mention 3 things and give 1 reason for each.

a)..... 1).....
b)..... 1).....
c)..... 1).....

13- Where do you accommodate your visitors when you have (happy or sad) celebrations? Please give 3 examples.

1).....
2).....
3).....

14- In what type of dwelling do you prefer to live (flat, court yard house, detached house, etc?). Give 3 reasons for your preference.

I prefer to live in.....
Because of:
1).....
2).....

3).....

15- What kind of relationship do you have with your neighbours (expellant – good – week – bad)? Give 3 reasons why.

My relationship is.....because:

1).....

2).....

3).....

16- Mention (3) things you most like in your current house and give (2) reasons for each.

1).....reason a).....

b).....

2)..... reason a).....

b).....

3)..... reason a).....

b).....

17- Mention 3 things you do not like in your current flat and give 2 reasons for each.

1).....reason a).....

b).....

2)..... reason a).....

b).....

3)..... reason a).....

b).....

18- Mention 3 building materials you consider to be suitable for your dwelling. Give 2 reasons for each.

The: building materials	the reasons:
1).....	a).....
	b).....
2).....	a).....
	b).....
3).....	a).....
	b).....

19- Mention 3 building materials you consider unsuitable for your dwelling. Give 2 reasons for each.

The: building materials	the reasons:
1).....	a).....
	b).....
2).....	a).....
	b).....
3).....	a).....
	b).....

20- Give me your opinion about the following things in your flat and give (2) reasons for your choices.

1) Lighting (good /bad)..... Reason a).....

Reason b).....

2) Ventilation (good /bad)..... Reason a).....

Reason b).....

3) (Audio and Heat) insulation (good/bad).....

Reason a).....

Reason b).....

4) Safety (good/bad)..... Reason a).....

Reason b).....

5) Maintenance (good/bad).....

Reason a).....

Reason b).....

6) Privacy (good/bad)..... Reason a).....

Reason b).....

7) Toilets (good/bad).....

Reason a).....

Reason b).....

8) Kitchen and its facilities (good/bad).....

Reason a).....

Reason b).....

9) Living room (good/bad).....

Reason a).....

Reason b).....

10) Guest room (good/bad).....

Reason a).....

Reason b).....

11) Bed rooms (good/bad).....

Reason a).....

Reason b).....

12) Balconies (good/bad).....

Reason a).....

Reason b).....

13) Store place (good/bad/non).....

Reason a).....

Reason b).....

14) Garage (good/bad/non)..... Reason a).....

Reason b).....

15) Lifts and staircases (good/bad/non).....

21- Give your opinion about the setback of your dwelling and mention 3 reasons for that view.

1).....

2).....

3).....

22- Mention 5 important qualities, aspects, or features you most like in the Libyan tradition houses. Pleas give 2 reasons why they are important.

1)..... Reason a).....
Reason b).....
2)..... Reason a).....
Reason b).....
3)..... Reason a).....
Reason b).....
4)..... Reason a).....
Reason b).....
5)..... Reason a).....
Reason b).....

23- Mention 3 things you do not like in the Libyan tradition houses. Please give 2 reasons for each.

1)..... Reason a).....
Reason b).....
2)..... Reason a).....
Reason b).....
3)..... Reason a).....
Reason b).....

24- Would you like to say anything more about your house?

.....
.....
.....
.....
.....

C: Information about the neighbourhood

25- Mention 3 things you most like in your current neighbourhood. Give 1 reason for each.

a).....1).....
b).....1).....
c).....1).....

26- Mention 3 things you dislike in your current neighbourhood. Give one reason for each.

a).....
b).....
c).....

27-Mention 3 things you would like to have in your neighbourhood in the future. Give 2 reason for each.

a).....1).....
2).....
b).....1).....

2).....
c).....1).....
2).....

28- Are you satisfied with the standard of facilities provided in your neighbourhood (water, electricity, etc.) Yes/no? Give 3 reasons why.
Because: 1).....
2).....
3).....

29- Mention 3 important things you miss from the past which would improve your neighbourhood. Give 1 reason why they are important.

The things:	the reasons:
a).....	1).....
b).....	1).....
c).....	1).....

30- Are you satisfied with the children's playing areas in your neighbourhood Yes/no? Give 2 reasons why.
Reasons 1).....
2).....

31- Mention 3 reasons that have motivated you to stay in your neighbourhood.
1).....
2).....
3).....

32- Mention 3 reasons could affect you to move from your neighbourhood.
1).....
2).....
3).....

33- Mention 3 difficulties you face from the location of your neighbourhood. Give 2 reasons for each.

The difficulties:	the reasons:
1).....	a).....
2).....	a).....
3).....	a).....

34- Mention 3 good characteristics in housing estates generally in Libya.
1).....
2).....
3).....

35- Mention 3 problems in housing estates generally in Libya.
1).....

2).....
3).....

36- What kind of transportation do you use to go from and to your work? Give 2 reasons why.
I use ..... Reason a).....
Reason b).....

37- Mention 3 means to reduce your travelling time to and from your work.

1).....
2).....
3).....

38- Would you like to say any thing more about your neighbourhood?
.....
.....
.....
.....
.....

D: Information about the city

39- Do you have easy access to city life from where you live Yes/no? Give 2 reasons why.
Reason 1).....
Reason 2).....

40- Give 3 thoughts on the relationship between your neighbourhood and the city.
1).....
2).....
3).....

41- Mention 3 architectural or urban changes you would like to make in Tripoli City in the future. Give 2 reasons for each.

1)..... Reason a).....
Reason b).....
2)..... Reason a).....
Reason b).....
3)..... Reason a).....
Reason b).....

42- Mention 3 architectural or urban changes that have been made in Tripoli City that you did not like. Give 2 reasons for each.
1)..... Reason a).....
Reason b).....
2)..... Reason a).....

Reason b).....

3)..... Reason a).....

Reason b).....

43- Would you like to say any thing more about your city?

.....

.....

.....

.....

.....

Appendix Two: the Arabic copy of the Questionnaire

استبيان اكاديمي

يهدف هذا الاستبيان الى دراسة و اختبار مدى تأثير قوانين و تشريعات المباني على المساكن التى أنشأتها الدولة الليبية (الاسكان الشعبي) بمدينة طرابلس على وجه الخصوص فى الفتره (1970 – 1990) و ذلك من اجل تحسين هذه القوانين لتسهم فى انتاج مساكن أكثر ملائمة للاسرة الليبية (ثقافيا و اجتماعيا و اقتصاديا) وبالتالي ربط الحاضر بالموروث الثقافي للمجتمع.هذا الاستبيان هو جزء من رسالة دكتوراه يقوم بها الباحث ويأمل منك المساعدة بالاجابة حتى يتمكن من أستكمال هذا البحث ولكم جزيل الشكر.

الباحث: على الذويب أمحمد باحث دراسات عليا الدرجة الدقيقة جامعة هيريوت وات – أدنبره - بريطانيا

أولا المعلومات الشخصية **رقم ورقة الاستبيان .....**

الاسم (اختياري)..... تاريخ الاستبيان/.....

العمر/..... الجنس/..... زمن البدايه (الساعه).....

الوظيفه/..... المستوى التعليمي/..... زمن الانتهاء(الساعه).....

مكان السكن الاصلي/..... مكان الميلاد/.....

العنوان مكان اجراء الاستبيان /.....

1- كم من السنين امضيتها ساكنا بمدينة طرابلس؟.....

2- كم شخص يعيش معك داخل بيتك؟.....

3- ماأعمار اطفالك؟.....

4- كيف امتلكت بيتك الحالي؟.....

5- كم من السنين أمضيتها فى بيتك الحالي؟.....

ثانيا معلومات عن الوحدة السكنيه (البيت)

6- اذكر ثلاثة اسباب حفزتك لاختيار مسكنك الحالي.

1).....

2).....

3).....

7- هل تفكر بالانتقال من مسكنك الحالي؟ اذكر ثلاثة اسباب لماذا. نعم/لا.....

1).....

2).....

3).....

8- هل عملت اي تغيير في بيتك؟ اذا كانت الاجابة بنعم اذكرثلاثة تغييرات مع ذكر سببين لكل تغيير.

التغيير الاول/..... السبب 1/.....

السبب 2/.....

التغييرالثاني/..... السبب 1/.....

السبب 2/.....

التغيير الثالث/..... السبب 1/.....

السبب 2/.....

9- اذكر ثلاثة تغييرات تود عملها ببيتك ولكن هناك أسباب ارغمتك على عدم عملها. اعطي سببين لكل تغيير.

التغيير الاول/..... السبب 1/.....

السبب 2/.....

التغييرالثاني/..... السبب 1/.....

السبب 2/.....

التغيير الثالث/..... السبب 1/.....

السبب 2/.....

10- اذكر ثلاثة اشياء مهمة تفتقدها ببيتك و ترى انك لو اضفتها تحسن البيت. أعطي سبب لكل واحد.

الشيء الاول/..... السبب/.....

الشيء الثاني/..... السبب/.....

الشيء الثالث/..... السبب/.....

11- هل الفراغات داخل بيتك كافية لاسرتك؟ أذكر ثلاثة أسباب لذلك. نعم/لا.....

السبب الاول/.....

السبب الثاني/.....

السبب الثالث/.....

12- أذا اتيحت لك فرصة المشاركة فى تصميم بيتك ما الاشياء التى ترغب فى وجودها به؟ أذكر ثلاثة أشياء مع ذكر سبب واحد لكل شيء.

الشيء الاول/.....السبب الاول/.....

الشيء الثاني/.....السبب الثاني/.....

الشيء الثالث/.....السبب الثالث/.....

13- أين تستقبل الزوار عند المناسبات الاجتماعية(الافراح و الاتراح)؟ أعطي ثلاثة أمكنه.

المكان الاول/.....

المكان الثاني/.....

المكان الثالث/.....

14- بأى نوع من المساكن ترغب بالاقامة به: شقه - بيت عربي تقليدي – بيت منفصل (فيلا). أذكر ثلاثة أسباب لرغبتك. أرغب بالاقامة فى/.....

السبب الاول/.....

السبب الثاني/.....

السبب الثالث/.....

15- ما نوع العلاقه التي تربطك بجيرانك (جيدة – حسنة – ضعيفة – سيئة)؟ أذكر ثلاثة أسباب لماذا.

نوع العلاقة/..... للاسباب

1).....

2).....

3).....

16- أذكر ثلاثة أشياء تحب وجودها ببيتك مع بيان سببين لذلك.

الشيء الاول/..... السبب 1).....

السبب 2).....

الشيء الثاني/..... السبب 1).....

السبب 2).....

الشيء الثالث/..... السبب 1).....

السبب 2).....

17- أذكر ثلاثة أشياء لا تحب وجودها ببيتك مع بيان سببين لذلك.

الشيء الاول/..... السبب 1).....

السبب 2).....

الشيء الثاني/..... السبب 1).....

السبب 2).....

الشيء الثالث/..... السبب 1).....

السبب 2).....

18- أذكر ثلاث مواد بناء تراها مناسبه لبيتك. أعطي سببين لكل منهما.

مواد البناء هى:

1)..... السبب أ).....

السبب ب).....

2)..... السبب أ).....

السبب ب).....

3)..... السبب أ).....

السبب ب).....

19- أذكر ثلاث مواد بناء لا تراها مناسبه لبيتك. أعطي سببين لكل منهما.

مواد البناء هى:

1)..... السبب أ).....

السبب ب).....

2)..... السبب أ).....

السبب ب).....

3)..... السبب أ).....

السبب ب).....

20- أعطي رأيك حول الاشياء التاليه فى بيتك مع بيان سببين لماذا.

1) الاضاءة الطبيعية جيدة/مقبوله/سيئة. السبب أ).....

السبب ب).....

2) التهوية جيدة/مقبوله/سيئة..... السبب أ).....

السبب ب).....

3) العزل (الحراري و الصوتي)جيد/مقبول/سيئ السبب أ).....

السبب ب).....

4) الامن و السلامه جيد/مقبول/سيئ. .. السبب أ).....

السبب ب).....

5) الصيانة أقوم بها/لا أقوم..... السبب أ).....

السبب ب).....

6) الخصوصية جيدة/سيئة..... السبب أ).....

السبب ب).....

7) الحمامات جيدة/مقبوله/سيئة. السبب أ).....

السبب ب).....

8) المطبخ و خدماته جيد/مقبول/سيئ. السبب أ).....

السبب ب).....

9) صالة المعيشة جيدة/مقبوله/سيئة.. السبب أ).....

السبب ب).....

10) المربوعه جيدة/مقبوله/سيئة.... السبب أ).....

السبب ب).....

11) حجرات النوم جيدة/مقبوله/سيئة السبب أ).....

السبب ب).....

12) الشرفات جيدة/مقبوله/سيئة.... السبب أ).....

السبب ب).....

13) المخزن جيد/مقبول/سيئ.... السبب أ).....

السبب ب).....

14) الجراج جيد/مقبول/سيئ السبب أ).....

السبب ب).....

15) السلالم و المصعد جيد/مقبول/سيئ السبب أ).....

السبب ب).....

16) النوافذ و أتجاهاتها جيدة/مقبوله/سيئة السبب أ).....

السبب ب).....

21- أعطي رأيك في الارتدادات (الابعاد بين بيتك و البيوت المجاوره). أذكر ثلاثة اسباب لماذا.

جيدة/مقبوله/سيئة.. السبب الاول/.....

السبب الثاني/.....

السبب الثالث/.....

22- أذكر خمسة معالم أو مظاهر أو نوعيات مهمة تحبها في المساكن التقليدية الليبية. أعطي سببين لماذا مهمه لكل منهما.

1)..... السبب أ).....

السبب ب).....

2)..... السبب أ).....

السبب ب).....

3)..... السبب أ).....

السبب ب).....

4)..... السبب أ).....

السبب ب).....

5)..... السبب أ).....

السبب ب).....

23- أذكر ثلاثة معالم أو مظاهر أو نوعيات لا تحبها في المساكن التقليدية الليبية. أعطي سببين لماذا لكل منهما.

1)..... السبب أ).....

السبب ب).....

2)..... السبب أ).....

السبب ب).....

3)..... السبب أ).....

السبب ب).....

24- أشياء اضافية ترغب في ذكرها عن الوحدة السكنية (البيت).

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ثالثا معلومات عن المجاورة السكنية (الحي السكني)

25- اذكر ثلاثة اشياء تحبها في مجاورتك السكنية الحالية. أعطي سبب واحد لكل منهما.

الشيء الاول/..... السبب أ).....

الشيء الثاني/..... السبب أ).....

الشيء الثالث/..... السبب أ).....

26- اذكر ثلاثة اشياء لا تحبها في مجاورتك السكنية الحالية. أعطي سببين لكل منهما.

الشيء الاول/..... السبب أ).....

الشيء الثاني/..... السبب أ).....

الشيء الثالث/..... السبب أ).....

27- أذكر ثلاثة أشياء تحب وجودها في مجاورتك السكنية مستقبلا. أعطي سببين لكل منهما.

الشيء الاول/..... السبب أ).....

السبب ب).....

الشيء الثاني/..... السبب أ).....

السبب ب).....

الشيء الثالث/..... السبب أ).....

السبب ب).....

28- هل أنت راضي عن مستوى الخدمات (كهرباء- مياه- مجاري- الخ) بمجاورتك السكنية. أعطي ثلاثة أسباب لماذا.

نعم/لا.....

السبب الاول/.....

السبب الثاني/.....

السبب الثالث/.....

29- أذكر ثلاثة أشياء مهمة أفتقدتها من الماضي و التي تعتقد انها تحسن من مستوى المجاورة السكنية. أعطي سبب واحد لماذا هي مهمه.

الاشياء 1)..... الاسباب أ).....

2)..... ب).....

3)..... ج).....

30- هل أنت راضي عن أماكن لعب الاطفال بمجاورتك السكنية؟ أعطي سببين لماذا.

نعم/لا..... السبب الاول/.....

السبب الثاني/.....

31- أذكر ثلاثة أسباب تحفزك للبقاء بمجاورتك السكنية الحالية.

السبب الاول/.....

السبب الثاني/.....

السبب الثالث/.....

32- أذكر ثلاثة أسباب يمكن أن تؤثر عليك للانتقال من مجاورتك السكنية.

السبب الاول/.....

السبب الثاني/.....

السبب الثالث/.....

33- أذكر ثلاث صعوبات تواجهك نتيجة لموقع مجاورتك السكنية. أعطي سببين لكل صعوبة.

الصعوبة الاوله/..... السبب أ/.....

السبب ب/.....

الصعوبة الثانية/..... السبب أ/.....

السبب ب/.....

الصعوبة الثالثة/..... السبب أ/.....

السبب ب/.....

34- أذكر ثلاث ميزات للمساكن العامة (الاسكان الشعبي) في عموم الجماهيرية.

الميزة الاوله/.....

الميزة الثانية/.....

الميزة الثالثة/.....

35- أذكر ثلاثة عيوب بالمساكن العامة (الاسكان الشعبي) في عموم الجماهيرية.

العيب الاول/.....

العيب الثاني/.....

العيب الثالث/.....

36- ما نوع المواصلات التي تستعملها من و الى مقر عملك؟ أعطي سببين لماذا.

أنا أستعمل/..... السبب الاول/.....

السبب الثاني/.....

37- أذكر ثلاث وسائل تقترحها للتقليل من زمن الانتقال من و الى مقر عملك.

الوسيلة الاوله/.....

الوسيلة الثانية/.....

الوسيلة الثالثة/.....

38- أشياء أخرى ترغب في اضافتها عن المجاورة السكنتة.

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رابعا معلومات عن المدينة

39- هل مقر سكنك يتيح لك الاتصال الجيد بالحياة في وسط المدينه. أعطي سببين لماذا.

نعم/لا..... السبب الاول/.....

السبب الثاني/.....

40- أعطي ثلاثة آراء حول العلاقة بين المجاورة السكنية و المدينة.

الرأى الاول/.....

الرأى الثاني/.....

الرأى الثالث/.....

41- أذكر ثلاثة تغييرات (معمارية و تخطيطية) تحب أن تحدث لمدينة طرابلس. أعطي سببين لكل منهما.

التغير الاول/..... السبب أ/.....

السبب ب/.....

التغير الثاني/..... السبب أ/.....

السبب ب/.....

التغير الثالث/..... السبب أ/.....

السبب ب/.....

42- أذكر ثلاثة تغييرات(معمارية و تخطيطية) لا تحبها حدتث بمدينة طرابلس. أعطي سببين لكل منهما.

التغير الاول/..... السبب أ/.....

السبب ب/.....

التغير الثاني/..... السبب أ/.....

السبب ب/.....

التغير الثالث/..... السبب أ/.....

السبب ب/.....

43- أشياء أخرى ترغب في أضافتها حول المدينة.

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